ReasoningMind

Basic I-1 Curriculum Highlights by Objective

Numbers and Operations Basics

Objective 1 Curriculum Highlights

Related TEKS
2.2C

Related Student Expectations

- Introduces recalling basic facts to adding within 20 with automaticity
- Introduces recalling basic facts to subtracting within 20 with automaticity
- Introduces generating a number that is greater than or less than a given whole number up to 1,200

Foundational RM Prerequisites

Vocabulary

addition	decrease	difference	digits
greater than	greatest	increase	less than
minuend	natural numbers	smallest	subtraction
subtrahend	sum	summand	whole numbers
zero			

Key Theory Material

I) Natural Numbers

a. The numbers we use to count things are called natural numbers or whole numbers.

b. Natural numbers come one after another.

i. 1 is the first and smallest natural number. Then comes 2, then 3, then 4, and so on.

c. There is no greatest whole number.

d. We can write any natural number with just ten digits: 1,2,3,4,5,6,7,8,9, and 0

II) Comparing Numbers

a. **Write this down:** The number that comes later when we count is greater. b. Seven is equal to seven. We write 7 = 7 in math.

c. **Write this down:** < is the symbol for "less than" and > is the symbol for "greater than"

i. For example, 7 < 9; 9 > 7

d. Greater numbers go on the larger side of the < symbol, and smaller ones go on the small side.

III) Addition

a. Remember: When we put things together, we add their numbers to get the total. b. **Write this down:** To "increase by a number" means to add the number.

i. For example, increase 6 by 4 means to add 4 to 6: 6 + 4.

c. **Write this down:** The numbers we add are called summands. The result of addition is called the sum.

i. For example, 3 + 2 = 5; summand + summand = sum

IV) Subtraction

a. Remember: When we take things away, we subtract to find how many are left.

b. **Write this down:** To "decrease by a number" means to subtract the number.

i. For example, to decrease 6 by 2 means to subtract 2 from 6: 6 - 2.

ii. Decreasing a number by 3 means subtracting 3 from the number. c.

Write this down: minuend – subtrahend = difference

i. For example, 5 – 3 = 2

V) The Number Zero

a. In math, to show that there are no objects to count, we write the number zero. b. 3 – 3 = 0

Key Problems for Practice

1. Compare the two numbers and place the correct sign between them (=, <, or >).

   5 ☐ 4

2. Compare the two numbers and place the correct sign between them (=, <, or >).

   1 ☐ 9

3. Fill in the blanks: 4 + 5 = 9

   There are two summands here: ___ and ___.

   The sum is ___.

4. Fill in the blanks: 6 – 1 = 5

   The minuend is ____.

   The subtrahend is ____.

5. If we increase 3 by 5, and then decrease the result by 6, we get ___.

Composition of the Numbers from 2 to 7

Objective 2 Curriculum Highlights

Related TEKS

2.2A, 2.2B

Related Student Expectations

- Introduces using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using standard form to representing numbers up to 1,200
- Introduces using word form to representing numbers up to 1,200
- Introduces using expanded form to representing numbers up to 1,200

Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

N/A

Key Theory Material

I) Composition of 2, 3, 4, and 5

a. There is one way to make the number 2: 1 and 1.
b. **Write this down:** Two ways to make up the number 3: 3 is 1 and 2; 3 is 2 and 1.
c. **Write this down:** Three ways to make up the number 4: 4 is 1 and 3; 4 is 2 and 2; 4 is 3 and 1.
d. **Write this down:** Four ways of making up the number 5: 1 and 4, 2 and 3, 3 and 2, and 4 and 1. e. The bigger the number, the more ways there are to make that number.

II) Composition 6 and 7

a. Five ways of making up the number 6: 1 and 5, 2 and 4, 3 and 3, 4 and 2, and 5 and 1.
b. Six ways of making up the number 7: 1 and 6, 2 and 5, 3 and 4, 4 and 3, 5 and 2, and 6 and 1.

Key Problems for Practice:

1. 3 and 3 is ____.

2. 1 and 5 is ____.

3. 4 and 3 is ____.

4. Replace each ★ with a **sign** to make each of the equalities true:

   a. 2 ★ 5 = 7 ; _____

   b. 7 ★ 5 = 2 ; _____

5. Replace each ★ with a **number** to make each of the equalities true:

   a. 4 + 2 = ★ ; _____

   b. 6 – 2 = ★ ; _____

   c. 2 + 4 = ★ ; _____

   d. 6–4=★; ____

Points, Curves, and Lines

Objective 3 Curriculum Highlights

Related TEKS

2.2E, 2.2F, 2,8A, 2.8B, 2.8C, 2.8D, 2.9C,

Related Student Expectations

- Prerequisite for generating a number that is greater than or less than a given whole number up to 1,200
- Prerequisite for naming the whole number that corresponds to a specific point on a number line
- Prerequisite for creating two-dimensional shapes based on given attributes, including number of sides
- Prerequisite for creating two-dimensional shapes based on given attributes, including number of vertices
- Prerequisite for classifying three-dimensional solids, including spheres, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including cones, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including cylinders, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including rectangular prisms (including cubes as special rectangular prisms, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including triangular prisms, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including spheres, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including cones, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including cylinders, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including rectangular prisms (including cubes as special rectangular prisms, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including triangular prisms, based on attributes using formal geometric language
- Prerequisite for classifying polygons with 12 or fewer sides according to attributes, including identifying the number of sides
- Prerequisite for classifying polygons with 12 or fewer sides according to attributes, including identifying the number of vertices
- Prerequisite for sorting polygons with 12 or fewer sides according to attributes, including identifying the number of sides
- Prerequisite for sorting polygons with 12 or fewer sides according to attributes, including identifying the number of vertices
- Prerequisite for composing two-dimensional shapes with given properties or attributes
- Prerequisite for composing three-dimensional solids with given properties or attributes
- Prerequisite for representing whole numbers as distances from any given location on a number line

Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

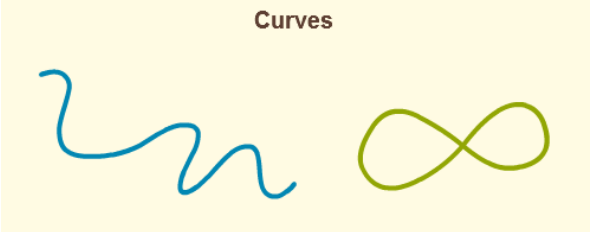
arrow curve extend forever line
point

Key Theory Material

I) Points, Curves, and Lines

a. To make a point, we mark the paper with a sharp pencil.
b. When we move a sharp pencil without lifting it from the paper, we get a curve. c.

Write this down:

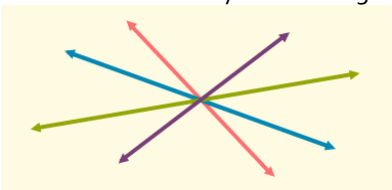


II) Lines

a. We use a ruler to draw lines. A line has no ends. It goes on forever. We put arrows on both sides to show that the line goes on forever.

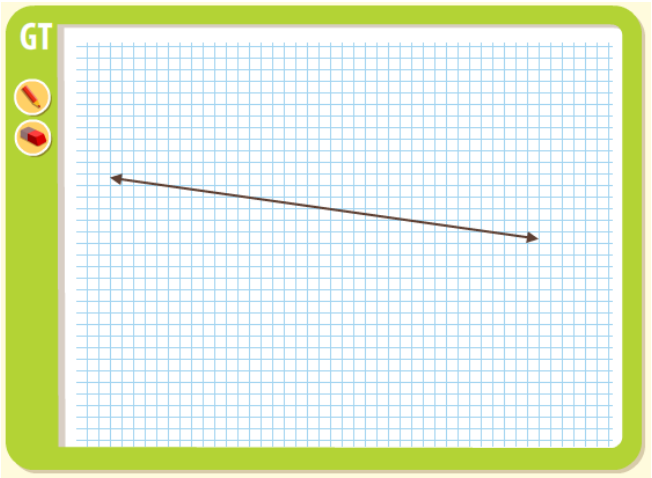
b. **Write this down:** This curve is called a line.

c. We can draw as many lines through a point as we like!

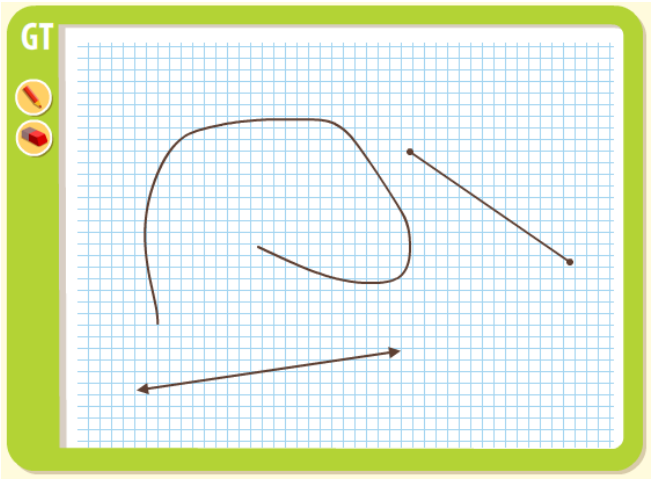


Key Problems for Practice

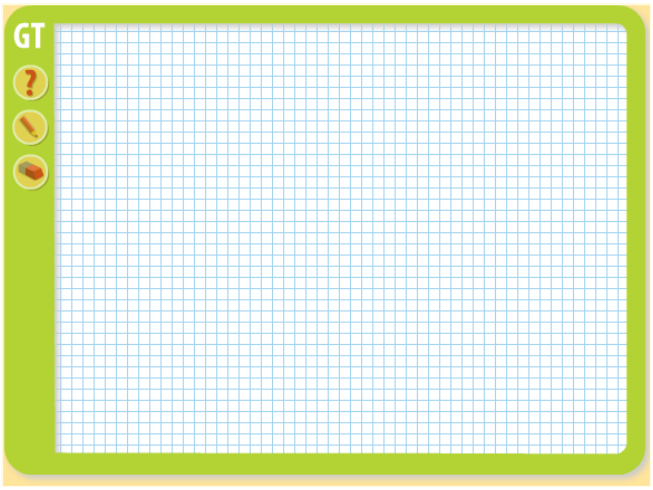
1. Use a pencil to mark three points *F*, *G*, and *K*, on this line.



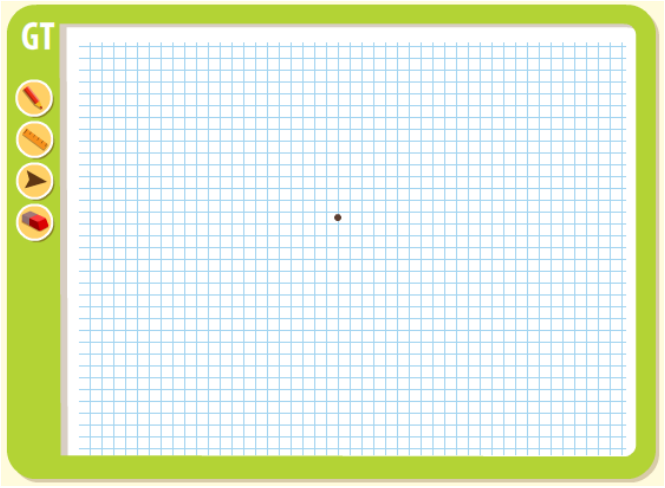
2. Do you see any lines? Mark a point on the line and label it with a letter *D*.



3. Use a pencil to mark three points A, B, and C, so that a straight line CANNOT be drawn through them.



4. Use a ruler to draw two lines that pass through this point.



Line Segments

Objective 4 Curriculum Highlights

Related TEKS

2.8A, 2,8B, 2.8D, 2.8E, 2.9A, 2.9C

Related Student Expectations

- Prerequisite for creating two-dimensional shapes based on given attributes, including number of sides
- Prerequisite for creating two-dimensional shapes based on given attributes, including number of vertices
- Prerequisite for classifying three-dimensional solids, including spheres, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including cones, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including cylinders, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including rectangular prisms (including cubes as special rectangular prisms, based on attributes using formal geometric language
- Prerequisite for classifying three-dimensional solids, including triangular prisms, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including spheres, based on attributes using formal geometric language
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- Prerequisite for sorting three-dimensional solids, including rectangular prisms (including cubes as special rectangular prisms, based on attributes using formal geometric language
- Prerequisite for sorting three-dimensional solids, including triangular prisms, based on attributes using formal geometric language
- Prerequisite for composing two-dimensional shapes with given properties or attributes
- Prerequisite for composing three-dimensional solids with given properties or attributes
- Prerequisite for decomposing two-dimensional shapes
- Prerequisite for identifying the resulting geometric parts
- Prerequisite for finding the length of objects using concrete models for standard units of length
- Prerequisite for representing whole numbers as distances from any given location on a number line

Foundational RM Prerequisites

- Points, Curves, and Lines

Vocabulary

endpoint line segment longer shorter

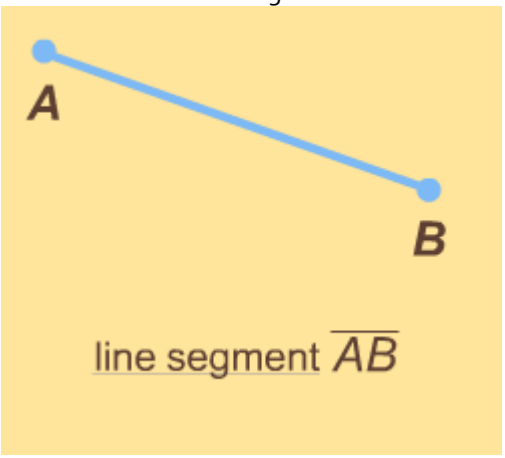
Key Theory Material

I) Naming Line Segments

a. This is a line segment.

Reasonir
Basic I-1 C

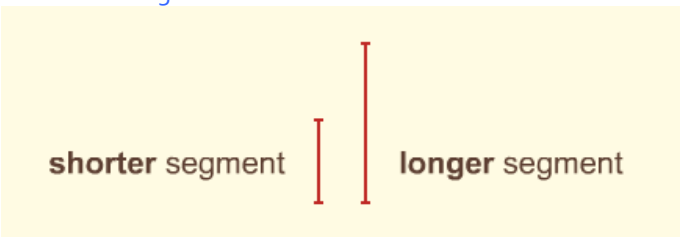
b. **Write this down:** Line Segments



1. Any line segment has exactly two endpoints.

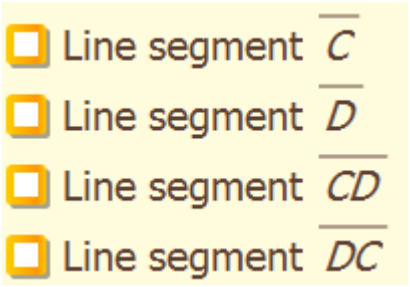
II) Comparing Line Segments

a. Shorter vs. Longer

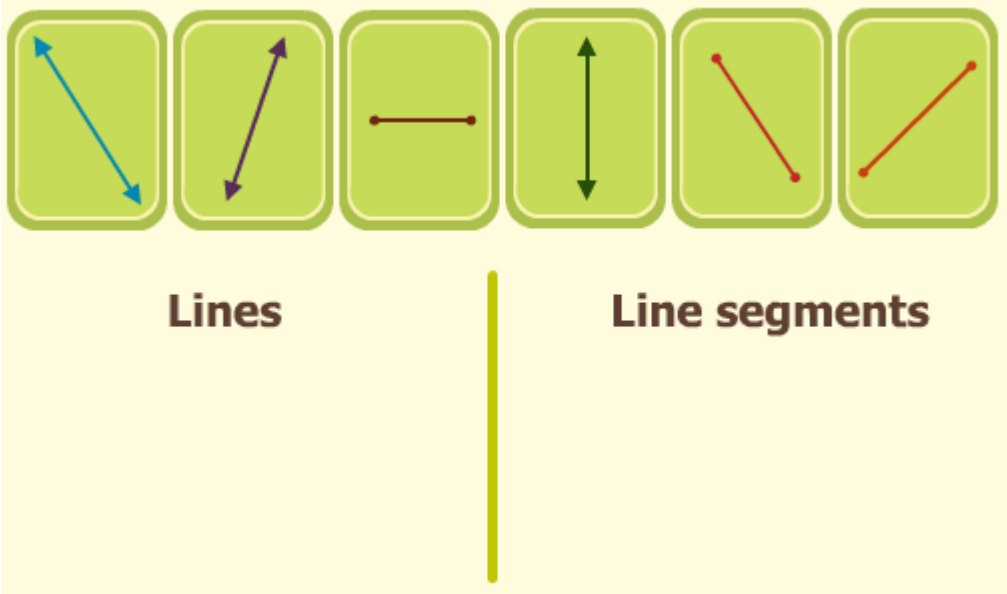


Key Problems for Practice

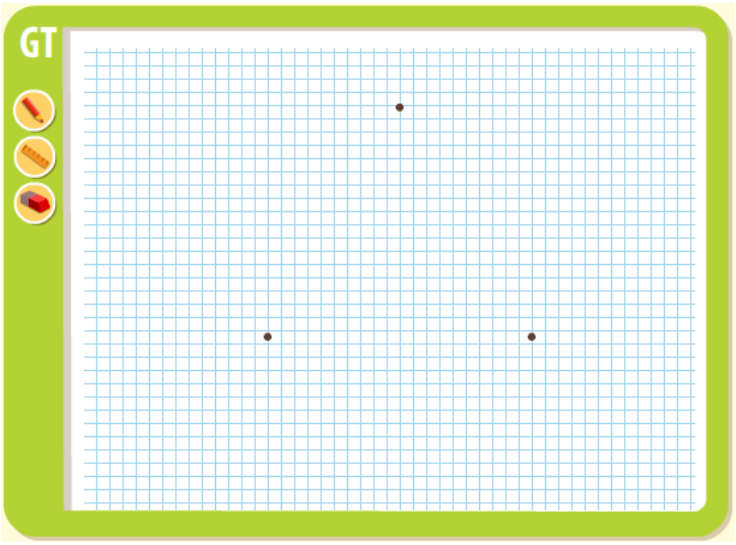
1. Andy drew a line segment. He wants to name it. Select all of the options below that he can choose:



2. Drag the lines to the left and line segments to the right.



3. Use the ruler and pencil to connect every two points with a line segment. How many line segments did you draw?



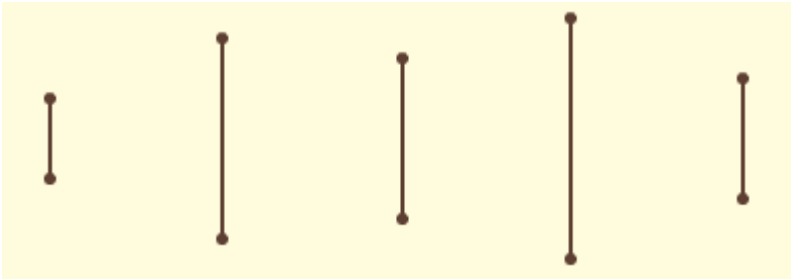
_____

4. Mark and label points A and B. Then join them with a line segment

When finished, choose the correct symbol for the line segment. The line segment is written:

- $\overrightarrow{AB}$
- $\overline{A}$
- $\overline{B}$
- $\overline{AB}$

5. Arrange these line segments from shortest to longest, starting with the shortest segment on the left.



Composition of the Numbers 8 and 9

Objective 5 Curriculum Highlights

Related TEKS

2.2A, 2.2 B

Related Student Expectations

- Introduces using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using standard form to representing numbers up to 1,200
- Introduces using word form to representing numbers up to 1,200
- Introduces using expanded form to representing numbers up to 1,200

Foundational RM Prerequisites

- Composition of the Numbers from 2 to 7

Vocabulary

calculate composition

Key Theory Material

I) Composition of 8 and 9

a. 8 is 1 and 7, 2 and 6, 3 and 5, 4 and 4, 5 and 3, 6 and 2, and 7 and 1.
b. 9 is 1 and 8, 2 and 7, 3 and 6, 4 and 5, 5 and 4, 6 and 3, 7 and 2, and 8 and 1. c. It is important to remember the composition of a number.
   1. Remember that 2 and 6 is 8, and you will know all of this: (i) 2 + 6 = 8
      (ii) 6 + 2 = 8
      (iii) 8 – 2 = 6
      (iv) 8 – 6 = 2

II) Composition of 2 through 9

a. **Write this down:** 2 and 5 is the same as 5 and 2.
b. This is helpful because when asked to calculate 2 + 5, remember: 2 and 5 is the same as 5 and 2. Now you can calculate 2 + 5 or 5 + 2. So, choose the easier one, and calculate 5 + 2.

Key Problems for Practice

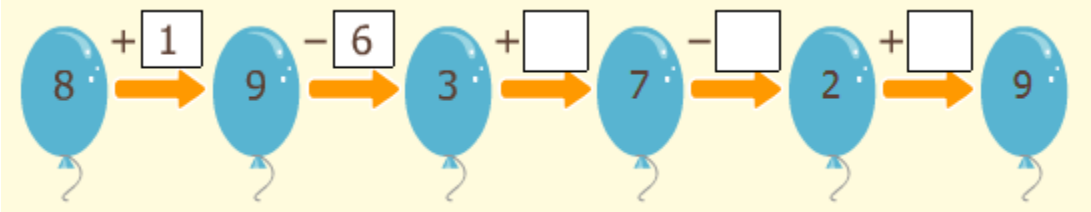
1. 7 and 2 is ____.

2. 6 and 2 is ____.

3. 7 is made up of 4 and 3, and 3 is made up of 2 and 1. So, 7 is made up of 4, 2, and 1. Fill in the blanks: 8 is 5, 1, and ____.

4. Several numbers are written in a sequence. The first number is 4. Every next number is 1 greater than the number before it. What is the fifth number in the sequence? _____

5. Fill in the blanks:



Segment Chains

Objective 6 Curriculum Highlights

Related TEKS

2.8A, 2.8D

Related Student Expectations

- Prerequisite for creating two-dimensional shapes based on given attributes, including number of sides
- Prerequisite for creating two-dimensional shapes based on given attributes, including number of vertices
- Prerequisite for composing two-dimensional shapes with given properties or attributes
- Prerequisite for composing three-dimensional solids with given properties or attributes

Foundational RM Prerequisites

- Line Segments

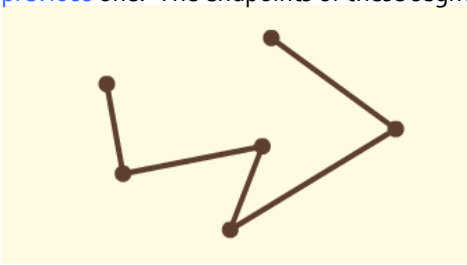
Vocabulary

previous segment chain vertex vertices

Key Theory Material

I) Segment Chains

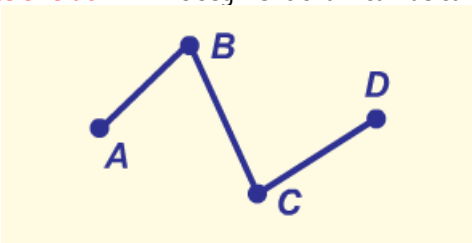
a. **Write this down:** A segment chain is made of line segments. The next segment begins at the end of the previous one. The endpoints of these segments are called vertices of the segment chain.



b. When we talk about just one of the vertices, we call it a vertex.

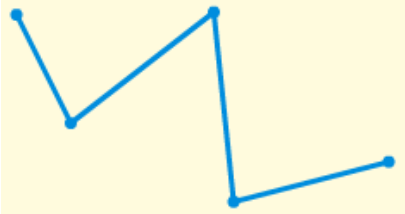
c. We name a segment chain by using the letters that label its vertices, in order one after another. d.

Write this down: This segment chain can be called ABCD or DCBA.

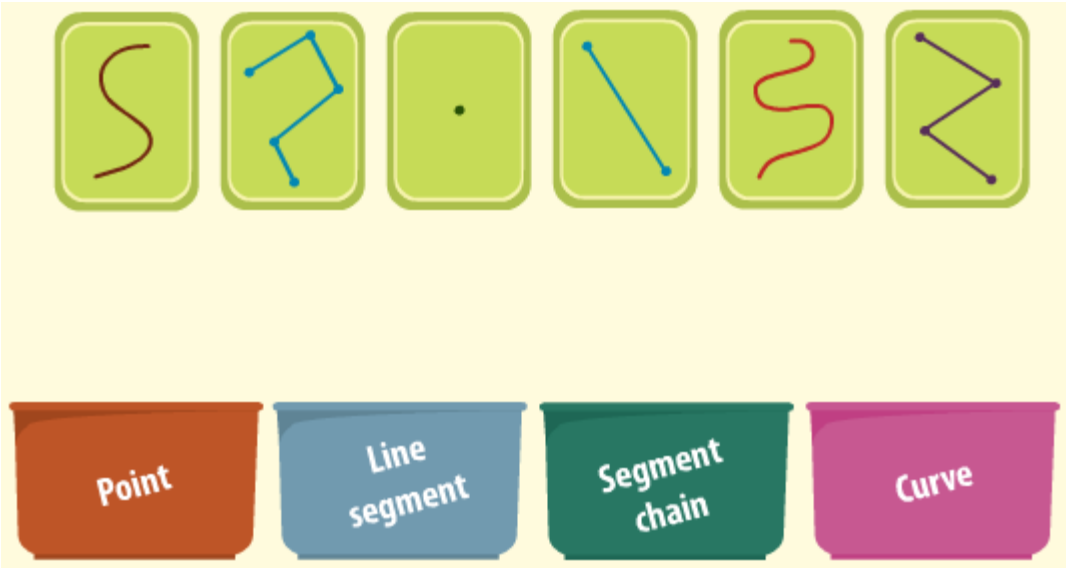


Key Problems for Practice

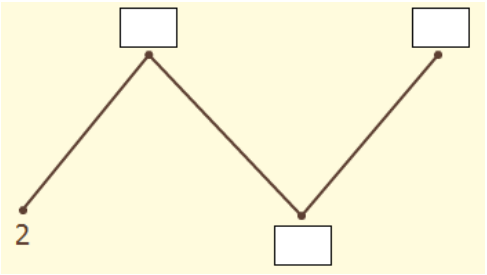
1. This segment chain has _____ vertices.



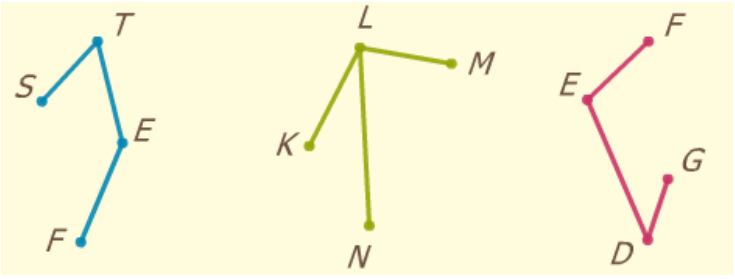
Drag the cards to sort each shape into the correct bowl.



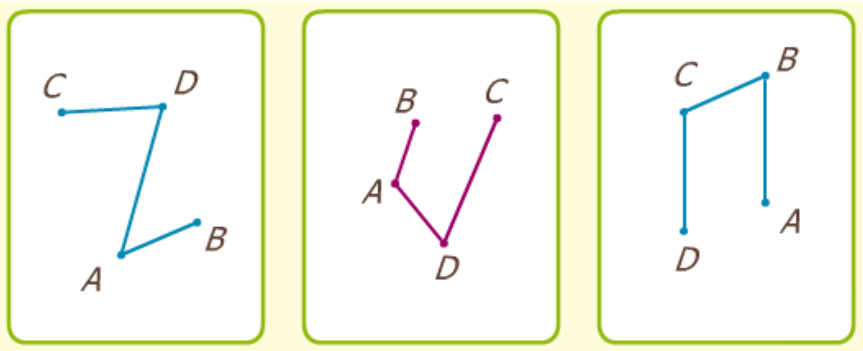
2. Put numbers at the vertices so that the number in each vertex is 3 more than the number in the previous vertex.



3. Choose the figure that is not a segment chain.



4. Mark the picture that shows segment chain ABCD.


C
D
B
A
B
C
A
D
C
B
A
D

Word Problems Solved by Addition

Objective 7 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.7C

Related Student Expectations

- Prerequisite for solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Prerequisite for solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces representing addition word problems where unknowns may be any one of the terms in the problem
- Introduces solving addition word problems where unknowns may be any one of the terms in the problem
- Maintains or enriches recalling basic facts to adding within 20 with automaticity

Foundational RM Prerequisites

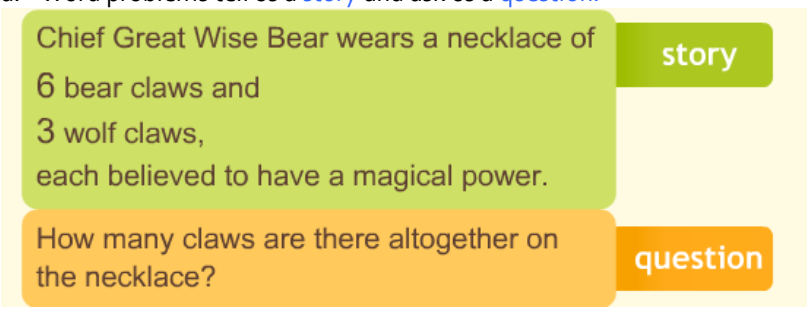
Vocabulary

altogether, in shorthand, question, several, story, total

Key Theory Material

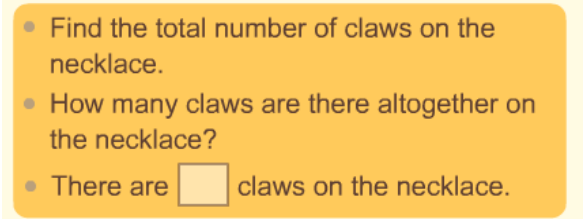
I) A Problem's Story and Question

a. Word problems tell us a story and ask us a question.



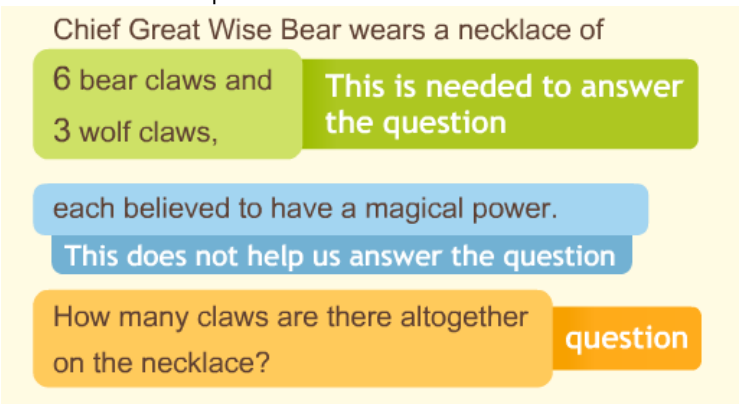
b. When reading a word problem:
   1. We read it to get a feel for the problem.
   2. We find the question and the story.

c. The question asked by a problem does not always have a question mark. Here are some different ways of asking the same thing:



II) Problems Written in Shorthand

a. After finding the problem's question and story, we must figure out: What in the story is needed to answer the question?

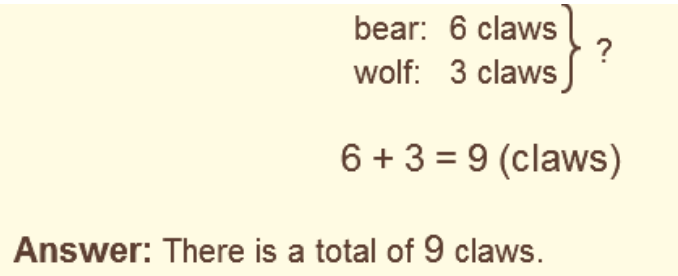


b. Next step: We write the problem in shorthand. "In shorthand" means as short as possible, only keeping what's really important.

1. A curly bracket means "altogether" or "in total"

2. A curly bracket with a question means "how many altogether?" or "how many in total?"
3. This is the problem written in shorthand:

4. We can read it like this: There are 6 bear claws and 3 wolf claws. How many claws are there in total?
5. **Write this down:**



III) Finding the Total

a. To find the total of two numbers, we add them: 4 + 2 = 6

IV) Finding the Total of Several Numbers

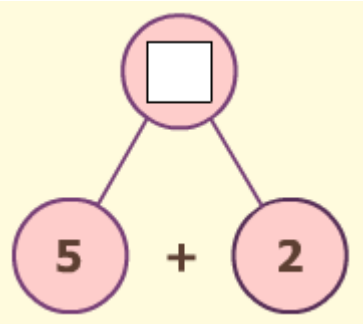
a. To find the total of several numbers, we add them.
b. **Write this down:** The total of 2, 4, and 3 is 2 + 4 + 3 = 9

Key Problems for Practice

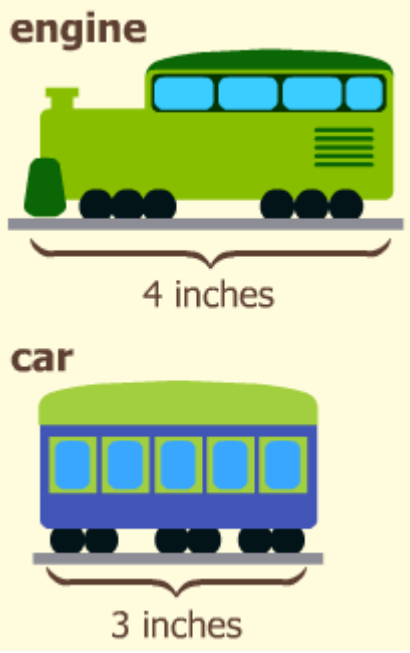
1. Yolanda brought 3 toy lion cubs, Tara brought 4 toy kittens, and Larry brought 7 toy cars, a toy train, and a toy puppy. How many toy animals did the children bring?

2. Sean bought an ice cream and a pie. The ice cream cost $5, and the pie cost $3. In total, how much did he spend?

3. The number that goes in the top circle is the sum of the two numbers in the bottom circles. What number goes in the top circle?



4. Find the length of a train that has two cars and one engine.



5. The picture shows Jim's daily cycling route. How many miles does Jim cycle every day?


4 mi
3 mi
2 mi

Word Problems Solved by Subtraction

Objective 8 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.7C

Related Student Expectations

- Prerequisite for solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Prerequisite for solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces representing subtraction word problems where unknowns may be any one of the terms in the problem
- Introduces solving subtraction word problems where unknowns may be any one of the terms in the problem
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Word Problems Solved by Addition

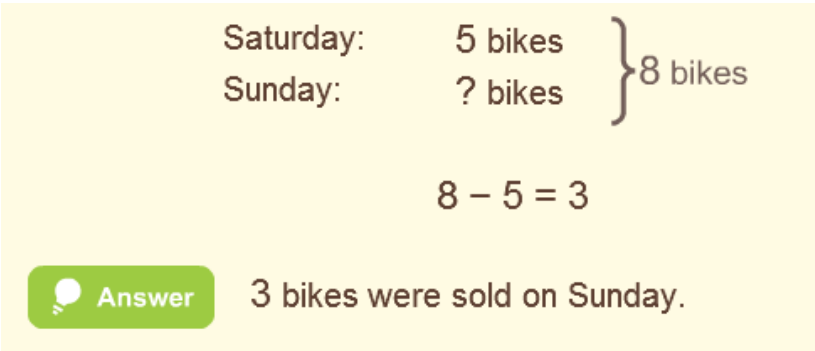
Vocabulary

given known remain unknown

Key Theory Material

I) Unknown Summand

a. **Remember:** Given a sum and a summand, we find the unknown summand with subtraction. b.
Write this down:



c. If a number is given in the story, it is known. If a number is not given in the story and is asked about in the question, it is unknown.

d. We put a question mark, ?, for the unknown number.

II) How Many Are Left

a. When things are taken away, we use subtraction to answer questions such as:
   1. How many are left?
   2. How much remains?

Key Problems for Practice

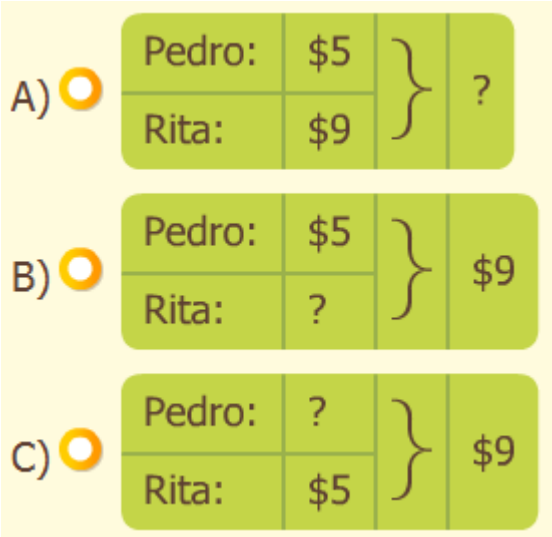
1. There were 3 bananas, 8 pears, and 6 apples on a table. Billy ate three pears and one banana. How many pears are left on the table?

2. Every morning when Gabby goes to school, she bikes the first part of the way, and then she travels the last 5 miles by bus. It is 8 miles from her house to the school. How many miles does Gabby travel by bike?

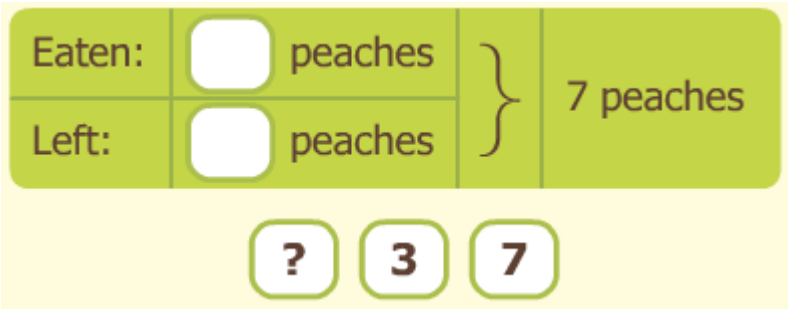
3. How much milk is left in this jug after 2 cups of it have been poured?

4. Pedro and Rita had $9 to spend on ice cream. Five of the dollars were Pedro's. How much money did Rita have?

   Which of the following gives the problem in shorthand?



5. There were 7 peaches in a bag. Janice ate 3 of them. How many peaches were left in the bag? Move the tiles to complete this problem's shorthand:



Numerical Expressions

Objective 9 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.4D, 2.7C

Related Student Expectations

- Prerequisite for solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Prerequisite for solving one-step word problems involving subtractingion within 1,000 using a variety of strategies based on place value, including algorithms
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Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

evaluate	left	numerical expressions	operations
phrases	right	sign	value

Key Theory Material

I) Numerical Expressions

a) We combine words into phrases. Numbers and plus and minus signs are like words. When we put them together, we get numerical expressions.

b) A numerical expression is made up of numbers and signs, like + and –.

2 + 7 5 – 3 3 + 6 + 1

c) In a numerical expression, a number always goes after the "+" or "-"sign.

i) For example, 6 + – 3 is *not* a numerical expression. 6 + 2 – 3 *is* a numerical expression.

II) Evaluating Numerical Expressions

a) To find the value of a numerical expression means to do the operations in it, or calculate it.
   i) For example, in the expression 3 + 1 we add to find the value. Since 3 + 1 = 4, the value of 3 + 1 is 4.
b) "Evaluate the expression" is another way to say "Find the value of an expression."
c) **Write this down:** 7 – 2 = 5
   7 – 2 is a numerical expression
   5 is the value of the expression

III) Order of Operations

a) **Write this down:** When an expression has only numbers and + or – signs, we evaluate from left to right.
   i) For example: 9 – 7 + 3 = 2 + 3 = 5

Key Problems for Practice

1. Find the value of the expression 5 – 3

2. Andy had 3 pieces of candy on Monday. On Tuesday, he got another 3 pieces of candy. He ate 4 pieces on Thursday. How many pieces of candy does Andy have left? Choose the numerical expression for this problem:

   a. 3 + 3 – 4

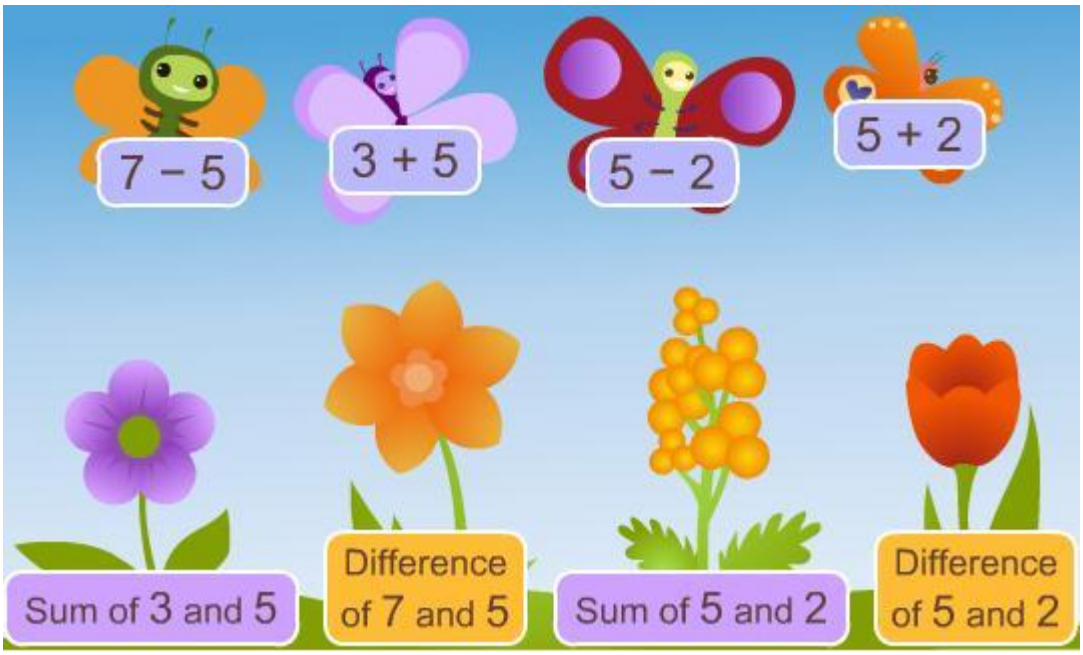
   b. 3 + 3 + 4

   c. 3 – 3 + 4

3. Find the value of this numerical expression: 3 – 2 + 1

4. Evaluate this numerical expression: 7 – 2 – 1

5. Help the butterflies fly to the correct flower by matching the words with their expressions.



Capacity and its Customary Units

Objective 10 Curriculum Highlights

Related TEKS

2.4A, 2.4C

Related Student Expectations

- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity
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Foundational RM Prerequisites

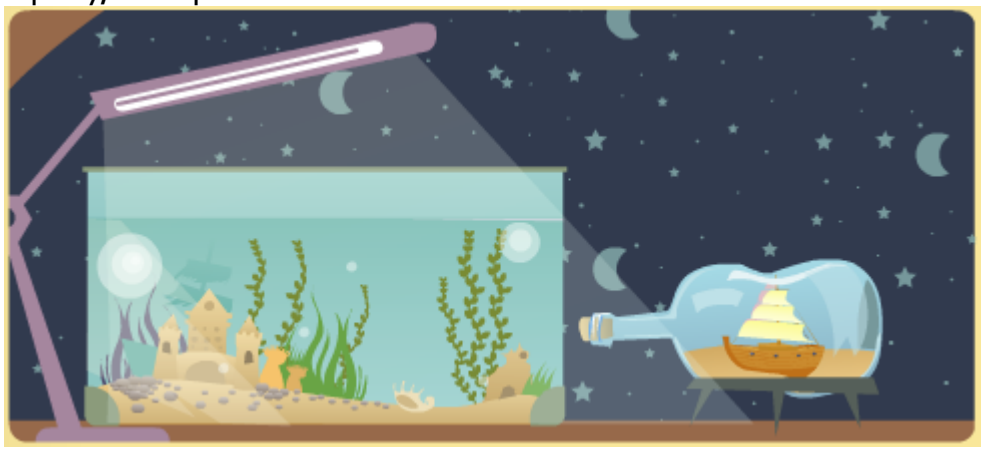
- Numbers and Operations Basics

Vocabulary

capacity	container	cup(c)	unit	gallon(gal)
hold	pint(pt)			

Key Theory Material

I) Capacity; The Cup



a. The fish tank can hold more water than the bottle. We say that the capacity of the tank is greater than the capacity of the bottle.
   1. Capacity of tank > capacity of bottle
   2. The bottle holds more water, so its capacity is greater.

3. The cup holds less water, so its capacity is smaller. b.

The container that holds more has the greater capacity.

c. In the United States, the cup is a standard unit of capacity.

d. The capacity of each of these containers is 1 cup. We could check that this is true by pouring all of the juice into the cups, one at a time.

e. The cup is a unit of capacity.

f. Let's measure the capacity of the jar and vase in cups

1. The jar can hold 3 cups of water, so the capacity of the jar is 3 cups.
2. The vase can hold 4 cups of water, so the capacity of the vase is 4 cups.
3. The capacity of the jar is less than the capacity of the vase.

II) The Pint

a. The pint is another unit of capacity used in the United States.1 pint is the same as 2 cups. b. The word pint is often shortened to pt, and the word cup is often shortened to c.

c. **Write this down:** 1 pint = 2 cups
1 pt = 2 c

d. We compare, add, and subtract capacities measured in the same units the same way as numbers. We write the units with each measurement.
7 cups < 9 cups
2 pints + 4 pints = 6 pints
10 cups – 5 cups = 5 cups

III) The Gallon

a. To measure large amounts of liquid, we use gallons. 1 gallon is the same as 8 pints. 1 gallon is also the same as 16 cups.

b. The word gallon is often shortened to gal.

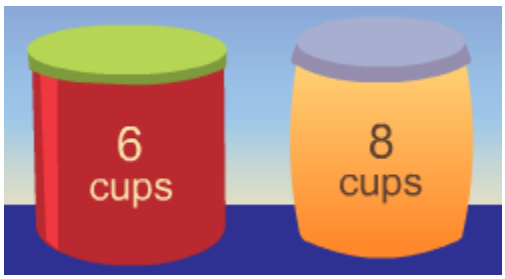
c. **Write this down:** The cup, the pint, and the gallon are customary units of capacity

1 gallon = 8 pints
1 gal = 8 pt

1 gallon = 16 cups
1 gal = 16 c

Key Problems for Practice

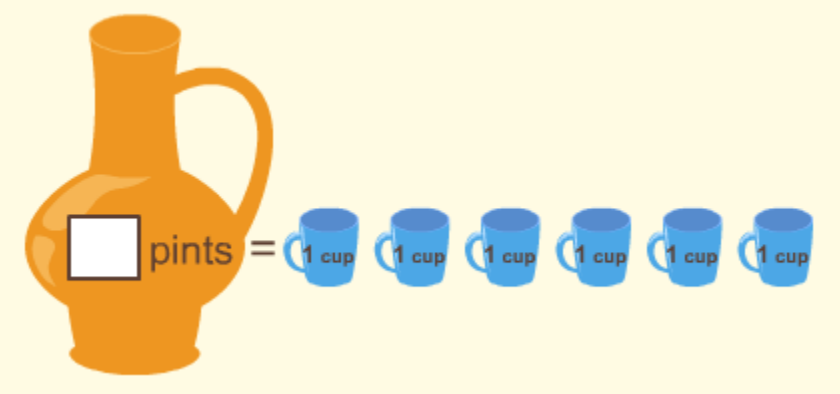
1. Which jar has the greater capacity?



2. To fill a pool for his newt, Domingo poured 3 gallons of water into it, and then added another 5 gallons. What is the capacity of the pool?

3. Ramira's bottle held 10 cups of water. She used 3 cups to water her plants. Does she have enough water left to fill her fish tank that has a capacity of 6 cups?

4. Remember: 1 pint = 2 cups. The capacity of this jar is 6 cups. How many pints can the jar hold?



5. Remember: 1 gallon = 8 pints. 1 pint = 2 cups. The capacity of a jar is 2 gallons. There are 6 pints of apple juice in it. Can we add 4 more cups of juice to this jar?

The Liter- A Metric Unit of Capacity

Objective 11 Curriculum Highlights

Related TEKS

2.4A, 2.4C

Related Student Expectations

- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity
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Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

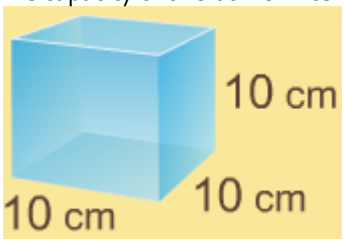
liter (L)

Key Theory Material

) **The Liter – A Metric Unit of Capacity**

a. In the United States, we use cups, pints, and gallons to measure capacity. We also use a metric unit of capacity, the liter. People use metric units all over the world.

b. The capacity of this box is 1 liter. In other words, 1 liter of water will completely fill this box.



c. 1 liter is a little more than 2 pints.

d. To shorten the word liter, we write L.

e. **Write this down:** The liter is a unit of capacity. 5 L means 5 liters.

Key Problems for Practice

1. Evaluate: 10 L – 6 L + 3 L = ___ L

2. Juan bought 2 L of lemonade and 4 L of juice. How many liters of drinks did he buy?

3. Tony has 10 liters of water in a pail. He poured 6 liters of it into a pot. How much water is left in the pail?

4. There were 10 liters of water in a pail. 4 liters were used to water some plants. Is there enough water left to fill a fish tank with a capacity of 7 liters?

5. Annie and Tania have 4 bottles of lemonade. The capacity of each bottle is 2 liters. Annie says they have enough lemonade to fill 2 jars that hold 3 liters each. Tania says they don't. Who is right?

Weight; Customary Units of Weight

Objective 12 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.4D,2.7C

Related Student Expectations

- Prerequisite for generating problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Prerequisite for generating problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000
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Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

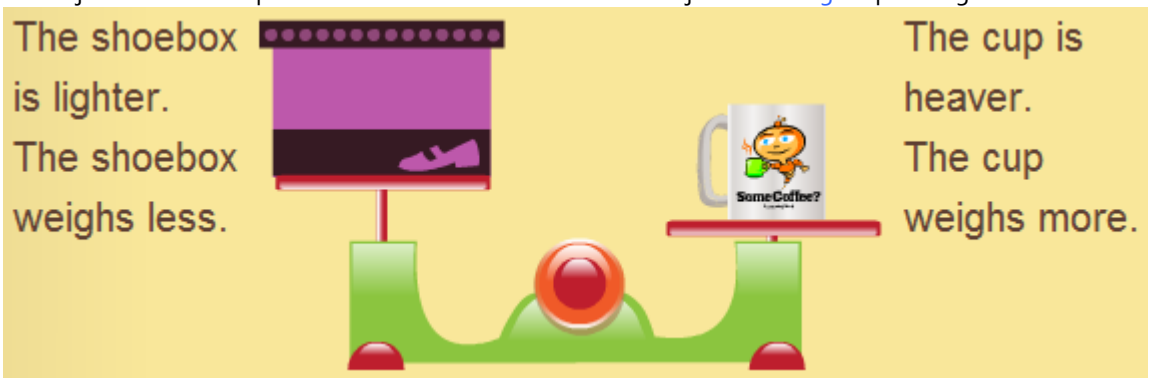
balance	balanced	balance scale	dial scale	heavier	heavy
higher	level	lighter	lower	mark	ounce (oz)
pan	pointer	pound (lb)	scale	weigh	weight

Key Theory Material

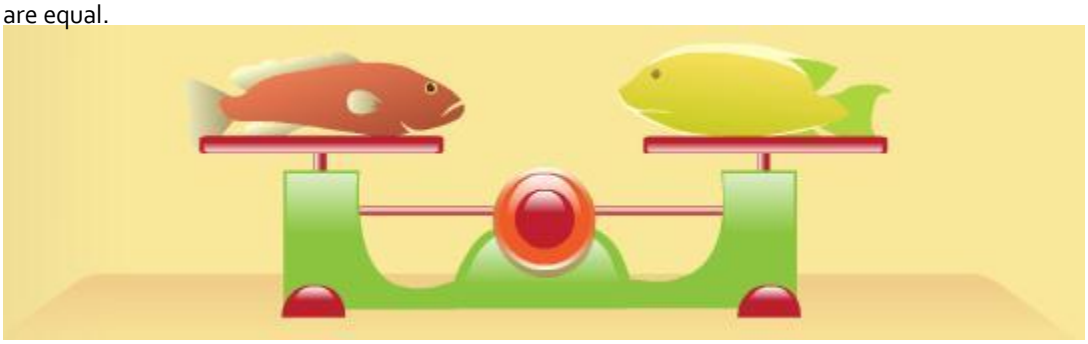
I) Which is heavier? Which is lighter?

a. We use a scale to tell a heavier object from a lighter one.
b. A balance scale tells us which of its pans has a heavier load.

c. The object in the lower pan of a balance scale is heavier. The object in the higher pan is lighter.



d. Both pans are at the same level. So, this scale is balanced. The two fish weigh the same. Their weights are equal.



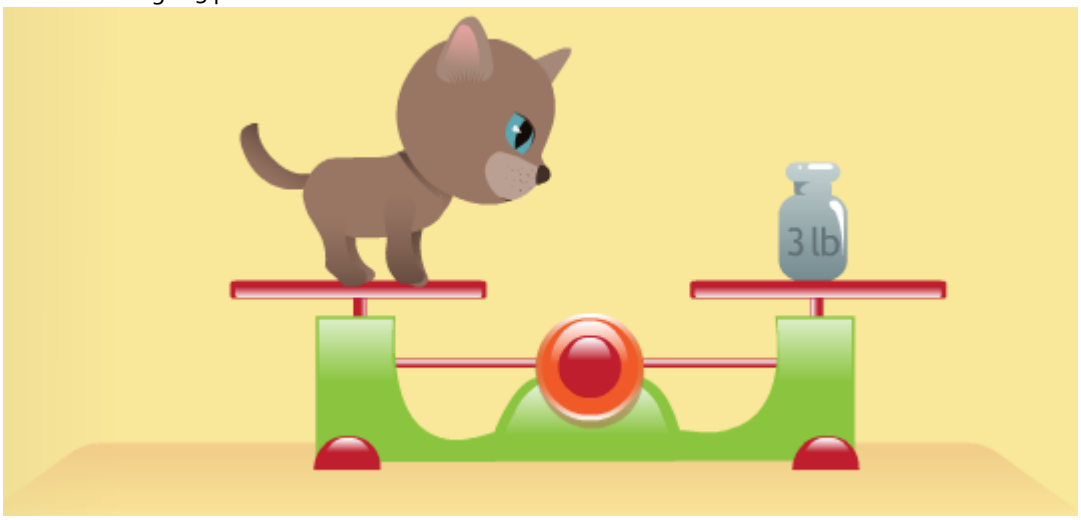
II) Measuring Weight; The Pound

a. "Weighing" is another way to say "measuring weight."

b. A pound is a unit used to measure weight. c.
Write this down: lb is short for pound
1 lb = 1 pound

III) Weighing with Balance Scales

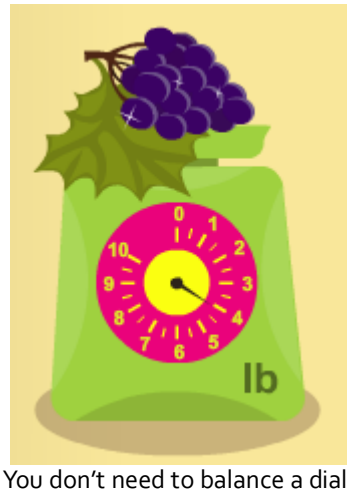
a. How heavy is this kitten? We can use a balance scale for measuring its weight.
   1. This kitten weighs 3 pounds.



b. "What does it weigh?" and "How heavy is it?" mean the same thing?

IV) Weighing with Dial Scales

a. This is a dial scale.



b. You don't need to balance a dial scale. Just place an object on top of the scale, and the pointer will show you its weight. The large marks labeled 1, 2, 3, and so on, stand for pounds.
   1. For example, when we put the bunch of grapes on the scale, the scale's pointer points to the large mark at the number 4. So, the bunch of grapes weighs 4 lb. c.

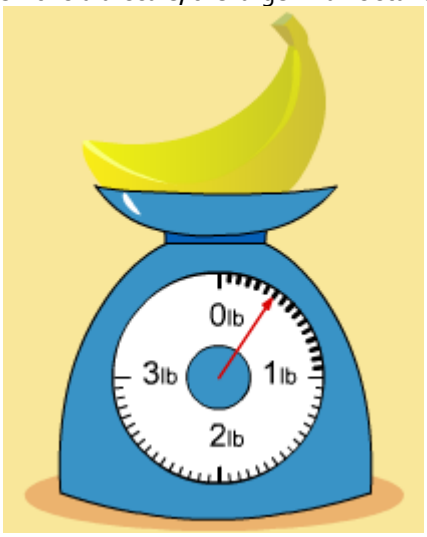
Dial scales are used more often than balance scales.

V) How Much Do They Weigh Together?

a. If they have the same units, weights can be added and subtracted just like numbers. We write the units with each measurement. For example:
   3 lb + 6 lb = 9 lb
   8 lb – 5 lb = 3 lb

VI) The Ounce

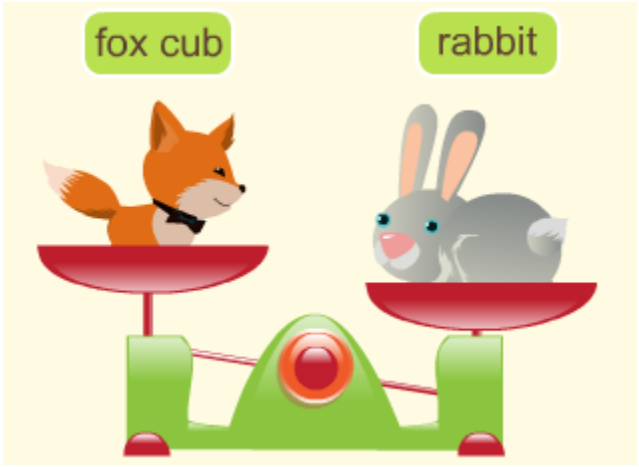
a. Many things are so light that they weigh less than a pound. We need a unit smaller than a pound to measure the weight of these light things.
b. An ounce is a small unit of weight. 1 pound is the same as 16 ounces. "oz" is short for ounce (or ounces).
c. **Write this down:** Pounds and ounces are customary units of weight.
   1 pound = 16 ounces
   1 lb = 16 oz
d. On this dial scale, the larger marks stand for pounds. The smaller marks stand for ounces.



1. The pointer is pointing to the small mark that is 6 spaces past the 0 mark. So the banana weighs 6 oz.

Key Problems for Practice

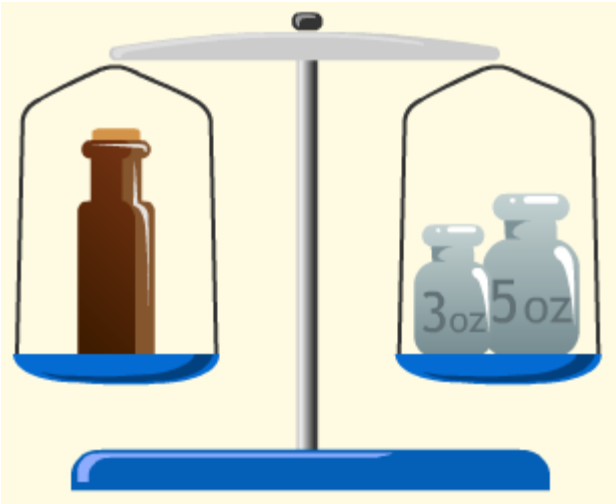
1. Which is lighter?



a. The rabbit
b. The fox cub

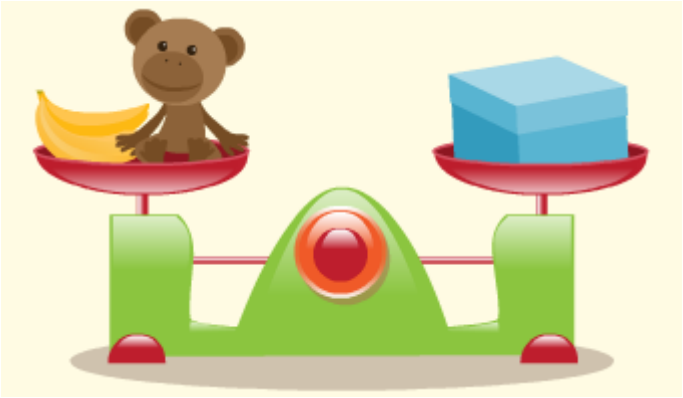
c. They have the same weight.

2. The weight of the bottle is ____ oz.

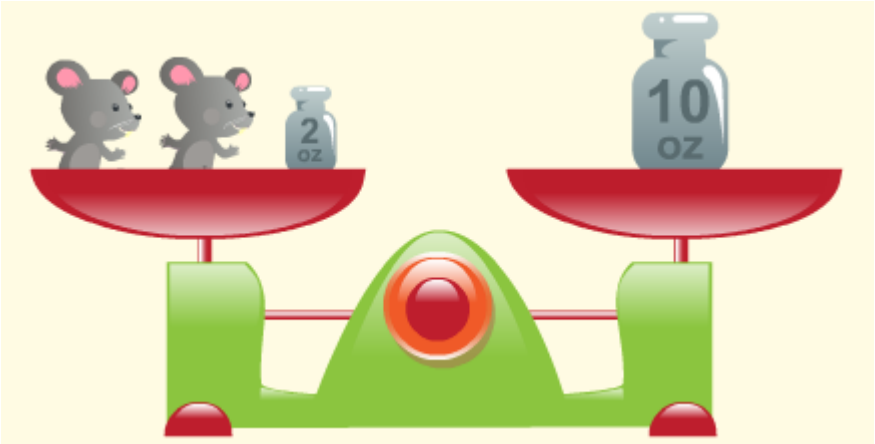


3. Calculate: 7 lb – 3 lb = ____ lb

4. The monkey weighs 2 lb. The bananas weigh 4 lb. How much does the box weigh?



5. Both mice weigh the same. The weight of one mouse is _____ oz.



The Kilogram- A Metric Unit of Mass

Objective 13 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.4D,2.7C

Related Student Expectations

- Prerequisite for generating problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
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Prerequisite RM Objectives

- Numbers and Operations Basics

Vocabulary

kilogram(kg) mass

Key Theory Material

I) The Kilogram – A Metric Unit of Mass

a. People all over the world use the kilogram as a unit of mass. b.
The word kilogram is often shortened to kg.

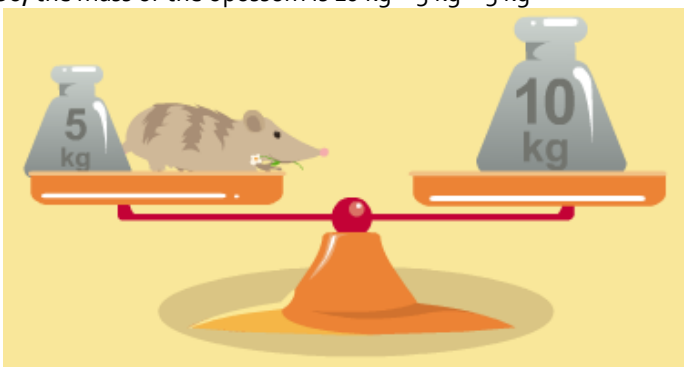
c. **Write this down:** 1 kilogram = 1 kg

d. 1 kilogram weighs a bit more than 2 pounds.

e. If they have the same units, masses can be added and subtracted just like numbers.
Write this down:
3 kg – 2 kg = 1 kg

3 kg + 2 kg = 5 kg

f. The scale below is balanced. So, the mass in the right pan is the same as the mass in the left pan.
   1. The total mass in the left pan in 10 kg.
   2. Of 10 kilograms in the left pan, there is a 5 kg weight, and the rest is the mass of the opossum.
   3. So, the mass of the opossum is 10 kg – 5 kg = 5 kg



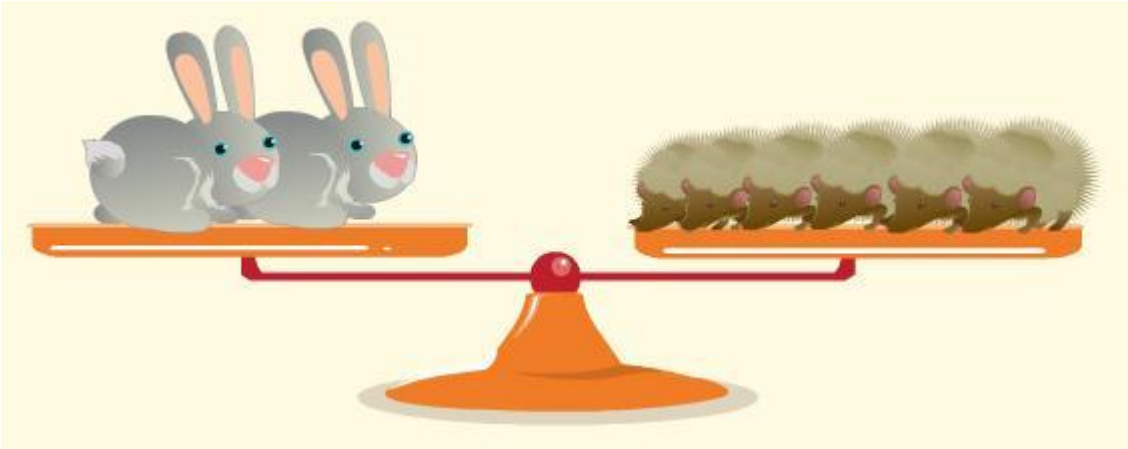
Key Problems for Practice

1. Calculate: 6 kg + 4 kg – 3 kg = ____ kg

2. A lemon is not lighter than a small bunch of grapes, and a banana is not lighter than the lemon. Can the small bunch of grapes be heavier than the banana?

3. What is the mass of the lightest vegetable?

4. The mass of each hedgehog is 1 kg. The two rabbits each have the same mass. What is the mass of each rabbit?



5. What is the gnome's mass?

Equations

Objective 14 Curriculum Highlights

Related TEKS

2.4A, 2.4C, 2.4D,2.7C

Related Student Expectations

- Prerequisite for generating problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
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Foundational RM Prerequisites

- Numerical Expressions

Vocabulary

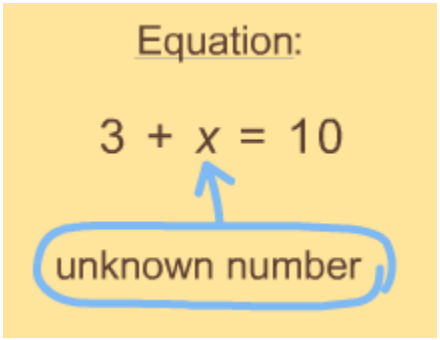
correct	equality	equation	false
incorrect	solution	solve	true

Key Theory Material

I) What is an Equation?

a. In math, we use a letter instead of ___ for an unknown number.
   1. We write $7 + x = 9$ instead of $7 + \_\_ = 9$.

b. **Write this down:** An equality with a letter standing for an unknown number that we have to find is called an equation.



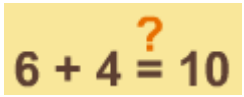
Examples of equations:

$7 + x = 9$ *a*
$+ 6 = 8$ *y* –
$5 = 3$
$8 - b = 2$

II) A Solution of an Equation

a. Just like the things we say, the equalities that we write can be either correct or incorrect.
   1. The equality $2 + 3 = 5$ is correct, or, in other words, it is true.
   2. The equality $3 + 2 = 6$ is incorrect, or, in other words, it is false. b. To show that an equality is incorrect, we can use the ≠ sign.

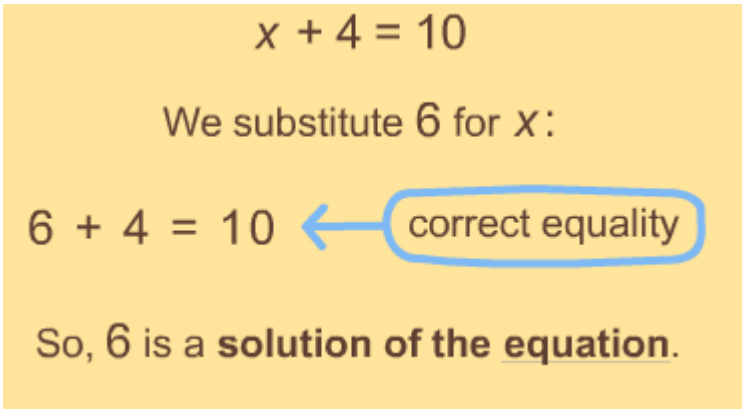
c. What should you do with an equation? Solve it!
   1. For example, $x + 4 = 10$ is an equation, and x is the unknown.
   2. Let's substitute 6 for x in the equation.



   (i) It's a good idea to write a "?" over the equality sign until it's decided if the equality is true (correct) or false (incorrect).
   3. $6 + 4 = 10$ is a correct equality.
   4. Substituting the number 6 for x in $x + 4 = 10$ turned the equation into a correct equality. 6 is called a solution of this equation.

d. A solution of an equation is a number that, when substituted for the letter, turns the equation into a correct equality.
   1. For example, 6 is a solution of the equation $x + 4 = 10$, since $6 + 4 = 10$ is a correct equality.

e. **Write this down:**



Key Problems for Practice

1. *b* stands for an unknown number. Which of these is an equation?

   a. $b + 3 = 5$

   b. $b + 3$

   c. $5 + 4 = 9$

2. Fill in the blank to get a correct equality: $3 + \_\_\_ = 9$

3. Which equality is NOT correct?

   a. $9 - 1 = 8$

   b. $8 - 1 = 9$

   c. $9 = 9$

4. Which number is a solution of the equation $d + 5 = 9$

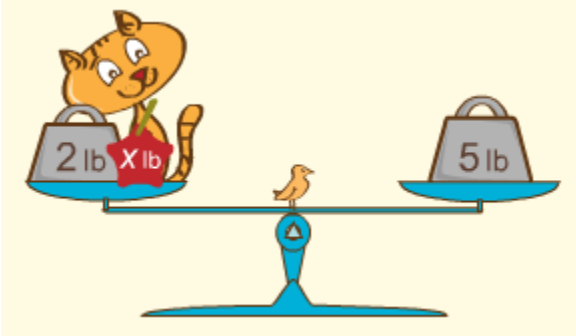
   a. 0

   b. 4

   c. 2

   d. none of the above

5. Solve $x + 2 = 5$ to get the kitten's weight.



The Second 10: The Numbers from 11 to 20

Objective 15 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.2C,2.2D, 2.4B

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using standard form to representing numbers up to 1,200
- Introduces using word form to representing numbers up to 1,200
- Introduces using expanded form to representing numbers up to 1,200
- Introduces generating a number that is greater than or less than a given whole number up to 1,200
- Introduces using place value to compare whole numbers up to 1,200 using comparative language, numbers, and symbols (>, <, or =
- Introduces using place value to order whole numbers up to 1,200

Foundational RM Prerequisites

- Numbers and Operations Basics

Vocabulary

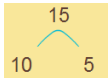
eighteen	eleven	fifteen	fourteen
nineteen	seventeen	sixteen	thirteen
twelve	twenty		

Key Theory Material

I) The Composition of the Numbers of the Second Ten

a. It is easier to count things that are separated into groups of 10. b. $1-10$ are the first ten. $11-20$ make up the second ten.

c. The first digit in each number represents the tens. The second stands for the ones.
d. **Write this down:** The Composition of 15: $15 = 1$ ten $+ 5$ ones.
   1. Here is a way to write that $15 = 10 + 5$:



e. **Write this down:** $15 = 5 + 10$ or $15 = 10 + 5$.

II) The Names of Numbers 11 to 20

a. **Write this down:** Remember the names of these numbers:

11	eleven	12	twelve	13	thirteen	14	fourteen
15	fifteen	16	sixteen	17	seventeen	18	eighteen
19	nineteen						

b. **Write this down:** 2 tens $= 20$. The name for the number 20 is twenty.

III) Comparing Numbers up to 20

a. **Write this down:** $\ldots 7, 8, 9, 10, 11, 12, 13, 14, \ldots$
   1. 13 comes after 9, so, $13 > 9$.
b. **Write this down:** $\ldots 9, 10, 11, 12, 13, 14, 15 \ldots$
   1. 14 comes later than 11 so, $14 > 11$.
c. Example: Let's compare these numbers 13 and 18.
   1. 11 and 18 both have one ten.
   2. 16 has more ones than 13, because $6 > 1$.
   3. So, $16 > 11$.
d. **Write this down:** 17 and 13 both have one ten. 17 has more ones than 13, because 7 > 3. So 17 > 13.

Key Problems for Practice

1. Fill in the blanks: $18 =$ ☐ tens $+$ ☐ ones.

2. Write each word as a number:

   a. Eleven _____

   b. Seven _____

   c. Nineteen _____

   d. Seventeen _____

3. Choose the correct sign (< , >, =).

   a. 10 _____ 10 + 1

b. 13 _____ 13 – 2

4. Put these numbers in order from greatest to least: $7, 10, 17, 14, 3, 19$.

5. Give all of the two-digit numbers that start with a 1 and for which the sum of the ones' digit and the tens' digit is less than . 5

Composition of the Number 10

Objective 16 Curriculum Highlights

Related TEKS

2.2A, 2.4A, 2.4B

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Prerequisite for using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Prerequisite for using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces recalling basic facts to adding within 20 with automaticity
- Introduces recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Composition of the Numbers from 2 to 7

Vocabulary

Key Theory Material

I) Composition of the Number 10

a. 10 is made up of 9 and 1, so $9 + 1 = 10$.

b. There are many ways to make up 10 using two numbers.

c. **Write this down:**

10		10	
9	9	9	1
8	8	8	2
7	7	7	3
6	6	6	4
5	5	5	5

d. For example, what do you have to add to 6 to make 10?

1. We add 4 to 6 to make 10.

Key Problems for Practice

1. Pick the two numbers that have a sum equal to ten: $2, 7, 4, 5, 3$.

2. Each missing number is 3 greater than the number before it. Fill in the blanks: $1, \square, \square, 10$.

   What is the sum of the two numbers you filled in?

3. Replace each blank with a sign to make the correct equalities.

   a. 2 ___ 3 = 5

   b. 7 ___ 2 = 5

   c. 4 ___ 2 = 2

   d. 10 ___ 2 =8

Mental Addition and Subtraction Within 20

Objective 17 Curriculum Highlights

Related TEKS

2.2A, 2.4A, 2.4B, 2.4C

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Fully covers recalling basic facts to adding within 20 with automaticity
- Fully covers recalling basic facts to subtracting within 20 with automaticity
- Maintains or enriches using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones

Foundational RM Prerequisites

- Composition of the Number 10
- The Second Ten: The Numbers from 11 to 20

Vocabulary

Key Theory Material

I) Adding within the Second Ten

a. How do we add $13 + 4$? Add the ones first. Then add the ten to the ones. b.

Write this down:

$$13 + 4$$
$$= 10 + \underbrace{3 + 4}_{7}$$

Add the ones first.

Then add the ones to the ten.

So, .

$= 10 + 7$
$= 17$
$13 + 4 = 17$

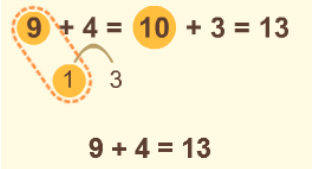
II) Subtracting within the Second Ten

a. How do we subtract $18 - 5$? Subtract the ones first. Then add the ones to the ten. b.
Write this down:

$18 - 5$
$= 10 + \underbrace{8 - 5}_{3}$ Subtract the ones first.
$= 10 + 3$ Then add the ones to the ten.
$= 13$
So, $18 - 5 = 13$.

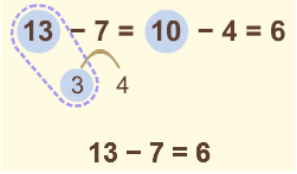
III) Adding When Crossing Over 10

a. How do we add $9 + 4$?
b. **Write this down:** First add to get to 10, and then add the rest!



IV) Subtracting When Crossing Over 10

a. How do we subtract $13 - 7$?
b. **Write this down:** First subtract to get to ten, and then subtract the rest!



Key Problems for Practice

1. What is the sum of 14 and 2?

2. Fill in the blank to make the equality true: $12 + 6 = \square$.

   a. 18

   b. 8

   c. 6

   d. 16

3. Replace the blanks with signs $(+, -)$ to make two true equalities:

   a. 14 ___ 7 = 5 ___ 2

   b. 15 ___ 5 = 3 ___ 7

4. Evaluate this expression: $17 - 4$.

5. Sanja and Raul had $\$16$ each. Sanja spent $\$8$ and Raul spent $\$9$ on new fish for their aquariums.

   Who has more money left? Try to answer without calculating.

More Than and Less Than

Objective 18 Curriculum Highlights

Related TEKS

2.4A 2.4C

Related Student Expectations

- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Mental Addition and Subtraction within Twenty

Vocabulary

decreasing	fewer than increasing	greater than more than	less than

Key Theory Material

I) More Than, Greater Than

a. When we have more umbrellas than dishes, we can say, "How many more umbrellas are there?" and we can also say, "How many fewer dishes are there?" These questions have the same answer.

b. More than and greater than mean the same thing.

c. **Write this down:** To find 3 more than 10, add 3 to 10.
   1. $10 + 3 = 13$, so
   2. 13 is 3 more than 10

d. **Write this down:** Increasing 11 by 6 means adding 6 to 11:
   1. $11 + 6 = 17$
   2. We increased 11 by 6. The number we get is 6 more than 11.

II) Fewer Than, Less Than

a. Fewer than and less than mean the same thing.

b. **Write this down:** To find "3 less than 10" means to subtract 3 from 10:
   a. $10 - 3 = 7$, so
   b. 7 is 3 less than 10

c. **Write this down:** Decreasing 11 by 6 means subtracting 6 from 11:
   a. Let's decrease 11 by 6
   b. $11 - 6 = 5$
   c. We decreased 11 by 6. The number we get is 6 less than 11.

Key Problems for Practice

1. The dog weighs $5\ lb$. The cat weighs $6\ lbs$ more than the dog. How much does the cat weigh?

2. The number on Becky's helmet is 7 less than 16. What number is on her helmet?

    a. 12
    b. 9
    c. 10
    d. 13
    e. 8

3. Paul and Ann had an equal number of books. Then Paul gave Ann 2 books. Now, Ann has how many more books than Paul?

4. A number is increased by itself. The result is 18. What is the number?

5. Choose the correct sign (<, >, =): 8 more than $6 \square 7$ less than 18.

"More Than" and "Less Than" Word Problems

Objective 19 Curriculum Highlights

Related TEKS

2.4A 2.4C

Related Student Expectations

- Prerequisite for solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Prerequisite for solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Mental Addition and Subtraction within Twenty
- Word Problems Solved by Subtraction

Vocabulary

cheaper than	farther than	faster than	lighter than
longer than	lower than	more expensive	older than
shorter than	taller than	younger than	

Key Theory Material

I) "More Than, Greater Than" Word Problems

a. Example: The ladybug has 6 spots. The number of spots on the butterfly is 14 greater than the number on the ladybug. How many spots does the butterfly have? Let's write this problem in shorthand.

1. The question of the problem is: "How many spots does the butterfly have?"
   We write the question in shorthand: (i)
   butterfly: ? spots
2. The story tells us that the ladybug has 6 spots. In shorthand, (i)
   ladybug: 6 spots
3. The story also tells us that the butterfly has 14 more spots than the ladybug. In shorthand, (i)
   ladybug: 6 spots
   butterfly: ? spots, 14 greater than ladybug
   (ii) Written another way,
   ladybug: 6 spots
   butterfly: ? spots, 14 greater than
   (a) The arrow points to the number of spots the ladybug has. It shows that the butterfly's number of spots is 14 greater than 6.

(b) The arrow always points to where to start.

4. The butterfly has 14 greater than 6 spots: $12 + 6 = 18$.

b. **Write this down:**
Eric: 8 balloons
Joan: ? balloons, 7 more than
Solution: $8 + 7 = 15$ (balloons)

c. **Write this down:** These things all mean "more than:"
1. Longer than
2. Older than
3. Faster than
4. Taller than
5. Farther than

II) "Less Than, Fewer Than" Word Problems

a. For example: Carson walked 10 miles. Sebastian walked 5 miles less than Carson. How many miles did Sebastian walk?
1. **Write this down:**
Carson: 10 mi
Sebastian: ? mi, 5 less than
Solution: 10 mi – 5 mi = 5 mi. Sebastian walked 5 miles.

b. Sometimes instead of "less than" we use other words that mean the same thing.

c. **Write this down:** These words all mean less than:
   1. Shorter than
   2. Younger than
   3. Cheaper than
   4. Lighter than
   5. Lower than

III) Assorted Word Problems

a. Some pants cost 19 dollars. A T-shirt is 8 dollars cheaper. How much does a T-shirt cost?
   1. "Cheaper" means "less expensive."
   2. **Write this down:** Shorthand:
      Pants: 19 dollars
      T-shirt: ? dollars, 8 dollars less than
      Solution: $19 - $8 = $11

Key Problems for Practice

1. Higgie: 18 balls
   2-Ring: ? balls, 4 fewer than

   This could be shorthand for which of the following problems?

   a. Higgie lost 18 golf balls, and 2-Ring lost 4 fewer balls than Higgie. How many golf balls did 2-Ring lose?

   b. 2-Ring bought 18 ping-pong balls, and Higgie bought 4 balls. How many balls did they buy altogether?

   c. While playing tennis, Higgie hit 18 balls, and 2-Ring hit 4 more balls than Higgie. How many tennis balls did 2-Ring hit?

2. Dominic and Keisha like to play darts. Keisha scored 19 points and Dominic scored 3 fewer points. How many points did Dominic score?

   a. Fill in this problem's shorthand.
      Keisha: ? points
      Dominic: ? points, ? points fewer than

   b. Dominic scored ? points

3. Evelyn is 10 years old. Jeremy is 4 years younger than Evelyn. Adam is 7 years older than Evelyn. How old is Jeremy? How old is Adam?

4. Superman helped 5 police officers, 3 more children than police officers, and 6 elderly women. How many people did Superman help?

5. Jason has 16 marbles. Mark has 3 fewer marbles than Jason. Andrew has more marbles than Mark but fewer than Jason. How many marbles could Andrew have? List all the options.

Numerical Expressions with Parentheses

Objective 20 Curriculum Highlights

Related TEKS

2.4A 2.4B, 2.4C, 2.4D

Related Student Expectations

- Introduces adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Introduces adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Introduces subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Equations

Vocabulary

parentheses

Key Theory Material

I) Order of Operations

a. **Write this down:** Order of Operations Rule: When an expression has only numbers and + or – signs, we evaluate it, one operation at a time, from left to right.

b. There were 15 passengers on a bus. 4 passengers got off. Then 3 passengers got on. Find out how many passengers are on the bus now.

1. $15-4+3$
2. To solve the problem, we must evaluate the expression.
3. When an expression has only numbers and + or – signs, we evaluate it, one operation at a time, from left to right.
4. We put numbers above the expression to show the order of operations:

$$\overset{1}{15} \quad \overset{1}{-} \quad 4 \quad \overset{2}{+} \quad 3$$

5. The 1 above the minus sign tells us to do the subtraction, $15-4$, first: (i)

$$\overset{1}{15} \quad \overset{2}{11} + 3 = 11 + 3$$

6. The 2 above the plus sign tells us to do the addition second, so we add $11+3$: (i)

$$15-4+3 = 11 + 3 = 14$$

11

c. Operations in parentheses are done first. For example:

1. $11 - \underbrace{(6+3)}_{9} = 11 - 9 = 2$ (2, 1)

II) Parentheses

a. Add the difference between 8 and 5 to 7.

1. What is the correct sign to get an expression for the difference between 8 and 5? (–)
2. An expression for the difference between 8 and 5 is 8 – 5.
3. Before we can add the difference between 8 and 5 to 7, we have to find the difference between 8 and 5. The show that this operation should be done first, we put the expression 8 – 5 in parentheses: (8 – 5)
4. Now we add this to 7: 7 + (8 – 5)
5. Now we can find the value of the expression: $7 + (8-5)$
6. $7 + \underbrace{(8-5)}_{3} = 7 + 3 = 10$ (2, 1)

b. Does the placement of parentheses matter? Let's find out.
   1. These expressions are exactly the same, but they have parentheses in different places: (i) $(9-4)-3$ (ii) $9-(4-3)$
   2. Let's evaluate the top expression first: $(9-4)=5=(9-4)-3=5-3=2$
   3. Now let's evaluate the bottom expression: $(4-3)=1=9-1=8.$
   4. The values of the two expressions are NOT the same: (i) $(9-4)-3=2$ (ii) $9-(4-3)=8$
   5. So, the placement of parentheses DOES matter. Changing their location can change the value of an expression.

III) Comparing Expressions

a. Which is greater: $5-2$ or $1+4$?
   1. We evaluate both expressions:
      (i) $5-2=3$; $1+4=5.$
      (ii) $3<5$
   2. Put the correct sign between the expressions: $5-2<1+4$
   3. The value of the expression on the left is less than the value of the expression on the right.

b. $1+3>3$ because $4>3.$
$1+3=2+2$, because $4=4$. These are equal expressions.

Key Problems for Practice

1. Evaluate this expression: $5+(14-9)$.

2. Using the numbers $15, 7,$ and 4 and the operation signs $+$ and $-$, make up an expression with parentheses that has a value of 12.
   (□ □ □) □ □ = 12

3. Find the value of $17-(8+6)$.
   a. 15
   b. 3
   c. 17
   d. 2

4. Find the value of these expressions, and put the correct sign (< , > , =) between them.

   $(17-9)+3-2$ □ $17-(9+3)-2$

5. Put a pair of parentheses in one of the expressions to make this true.

   $16-11-4<16-11-4$

Comparing Numbers Using Subtraction

Objective 21 Curriculum Highlights

Related TEKS

2.4C

Related Student Expectations

- Prerequisite for solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms

Foundational RM Prerequisites

- Word Problems Solved by Subtraction

Vocabulary

Key Theory Material

I) Comparing Numbers Using Subtraction

a. Say you've captured 7 dragons, and you need to know if you have enough cages.
   1. See which you have more of, cages or dragons, by counting.
   2. You have more cages than dragons. You have fewer dragons than cages. These are two ways of saying the same thing.

b. **Write this down:**
   1. To find out how much greater 13 is than 9, find $13 - 9$.
   2. To find out how much less 9 is than 13 find $13 - 9$.

Key Problems for Practice

1. Remember: To decrease by a number means to subtract the number.

   15 was decreased by a number that is 8 greater than 3. What was the result?

2. Mortimer thought of a number, subtracted 5 from it, decreased the result by 10, and added 8.

   The answer he got was 10.

   a. Which number was greater: the one he thought of, or the one he got?

   b. How much greater was it?

3. On Sunday, Higgie found 4 more nuts than she found on Friday, and 5 more nuts than she found on Saturday. When did Higgie find more nuts, Friday or Saturday?

   a. Friday

   b. Saturday

   c. She found the same number on Friday and Saturday.

4. 1 apple weighs as much as 2 pears. Which is heavier, 1 apple or 1 pear?

How Many More, How Many Fewer

Objective 22 Curriculum Highlights

Related TEKS

2.4C, 2.4D

Related Student Expectations

- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Fully covers generating problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Fully covers generating problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000

Foundational RM Prerequisites

- Mental Addition and Subtraction Within Twenty
- Word Problems Solved by Subtraction

Vocabulary

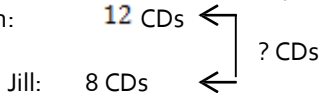
Key Theory Material

I) Comparing Numbers Using Subtraction

a. Mickey has 17 toy cars, and Ricky has 8.
   1. What two questions can we ask, using the words "more" and "fewer"?
      (i) Mickey has how many more toy cars than Ricky? (ii) Ricky has how many fewer toy cars than Ricky?
   2. $17 - 8 = 9$
   3. Answer: Mickey has 9 more toy cars than Ricky.

II) Solving Word Problems with Subtraction

a. Tom has 12 CDs on his shelf, and Jill has 8 CDs on hers. How many more CDs are there on Tom's shelf than on Jill's shelf?
   1. We have to compare these two numbers and tell how many more one of them is than the other.
      (i) We use a double arrow to point to numbers we want to compare by subtracting. (ii)

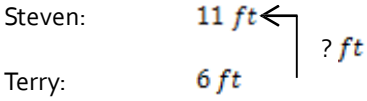


      (iii) We subtract the smaller number from the greater number and get the difference.
   2. To put it another way, there are 4 fewer CDs on Jill's shelf than there are on Tom's. So, the difference tells us two things: how many more the larger number is and how many fewer the smaller number is.

b. **Write this down: Remember:** We use subtraction to find the answer to questions such as:
   (i) How many more? (ii)

How much greater? (iii)
How many fewer? (iv)
How much less?

c. **Write this down:** Scary Steven is 11 feet tall and Terrifying Terry is 6 feet tall. How much taller is Steven than Terry?



(i) `11ft – 6ft = 5ft`
(ii) Answer: Steven is 5 feet taller than Terry.

Key Problems for Practice

1. Becky walked 3 miles. The Math Pirate drove 15 miles. How many fewer miles did Becky cover?

2. Ung and Flimp got their math tests back. Ung got 18 answers correct, and Flimp got 15. Flimp got how many fewer correct answers than Ung? Choose an expression for this problem.

   a. 18 + 15

   b. 18 – 15

   c. 15 + 18

   d. 18 – 18

3. There are 18 nuts and 16 bolts. Which are there more of, nuts or bolts?

   a. Nuts

   b. Bolts

   c. There is an equal number of nuts and bolts.

4. Use each of the numbers (3, 8, 17) once to make a true equality:

   $12 - ? = ? - ?$

Expressions with Letters

Objective 23 Curriculum Highlights

Related TEKS

2.7C

Related Student Expectations

- Prerequisite for representing addition word problems where unknowns may be any one of the terms in the problem
- Prerequisite for representing subtraction word problems where unknowns may be any one of the terms in the problem
- Introduces solving addition word problems where unknowns may be any one of the terms in the problem
- Introduces solving subtraction word problems where unknowns may be any one of the terms in the problem

Foundational RM Prerequisites

- Numerical Expressions with Parentheses

Vocabulary

substitute

Key Theory Material

I) Expressions with Letters

a. **Write this down:** We can write the expression $a + 8$ in words as: "the sum of a and 8."

b. **Write this down:** We can write the expression $6 - b$ in words as "the difference between 6 and b."

c. Three kids in an RM class did a great job and got 5 bonus points.

1. Carmen had 10 points before that, so she now has $10 + 5$ points.
2. Pete had 7 points, and now he has $7 + 5$ points.
3. Jamarcus had 12 points, and now he has $12 + 5$ points.

II) Substituting Numbers for Letters

a. We want to find what $2 + k$ is equal to when $k = 9$.

1. Let's substitute the number 9 for the letter k.
2. To substitute means we replace the letter in the expression with a number: $2 + k$ when
   (i) When $k = 9, 2 + k = 2 + 9$.
3. $2 + 9$ is a numerical expression. It can be evaluated: (i)
   $2 + 9 = 11$. This is the value of the expression.

b. To evaluate $6 - b$ when $b = 4$ means to replace b with 4 and evaluate the numerical expression:

1. $6 - b = 6 - 4 = 2$
2. We substituted 4 for k in the expression.

III) Finding Several Values of an Expression with Letters.

a. **Write this down:** Evaluate the expression $10 - c$, when $c = 5$ and when $c = 6$.

1. When $c = 5$: $10 - c = 10 - 5 = 5$
2. When $c = 6$: $10 - c = 10 - 6 = 4$

b. It is convenient to use a table to write down several values of an expression with letters.
Here are the results of evaluating the expression $9 - b$, when $b = 5$, when $b = 8$, and when $b = 7$:

b	5	8	7
$9 - b$	4	1	2

Key Problems for Practice

1. How can we write the expression $5 - b$ in words?

   a. the sum of 5 and b

   b. the expression between 5 and b

   c. the difference between 5 and b

2. Which of the following are expressions with letters? Circle all that apply.

   a. $p - 7$

   b. $2 + 14$

   c. $8 + t$

   d. $13 - 5$

3. What does the expression $a + 16$ look like if $a = 20$?

   a. $20 - 16$

   b. $20 + 16$

   c. $16 + 16$

   d. $20 + 20$

4. Let's evaluate the expression $9 - b$ when $b = 6$, when $b = 9$, and when $b = 4$.

b	6	9	4
$9 - b$			

5. Compare using the symbols <, >, and =.

   a. When $a = 6$:

$a + 2 \boxed{?} \; a + 12$

b. When $b = 18$:

$b - 2 \boxed{?} \; b - 12$

Triangles, Quadrilaterals, and Perimeter

Objective 24 Curriculum Highlights

Related TEKS
2.8A, 2.8C, 2.9A

Related Student Expectations

- Introduces creating two-dimensional shapes based on given attributes, including number of sides
- Introduces creating two-dimensional shapes based on given attributes, including number of vertices
- Introduces classifying polygons with 12 or fewer sides according to attributes, including identifying the number of vertices
- Fully covers finding the length of objects using concrete models for standard units of length

Foundational RM Prerequisites

- Segment Chains

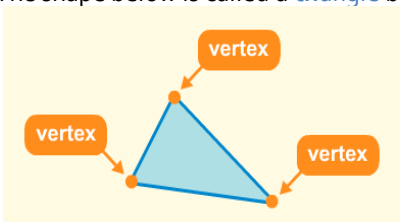
Vocabulary

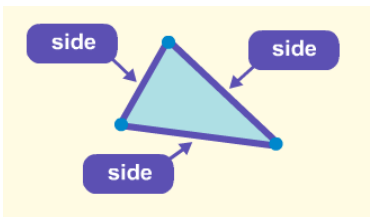
perimeter quadrilateral sides triangle

Key Theory Material

I) Triangles

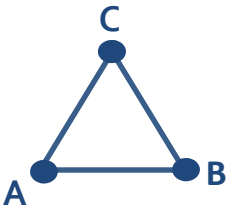
a. The shape below is called a triangle because it has **three** vertices and **three** sides.





b. **Write this down:**

1. Every triangle has 3 vertices.
   (i) A, B, and C are the vertices of triangle ABC.
2. Every triangle has 3 sides.
   (i) $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$ are the sides of triangle ABC.

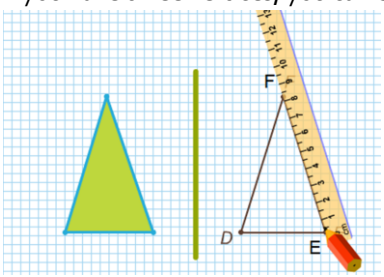


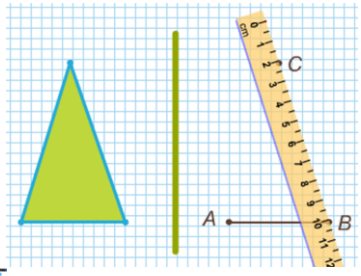
II) Drawing and Measuring Triangles

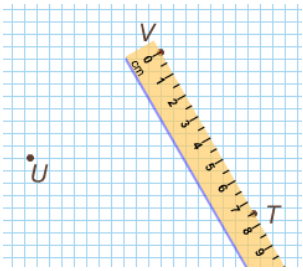
a. Shown are sides $\overline{DE}$ and $\overline{DF}$ of triangle DEF. We will draw the third side to get triangle DEF.

b. Given the side $\overline{AB}$ and the vertex C, we can draw the other two sides to get triangle ABC.

c. If you have three vertices, you can easily draw a triangle.

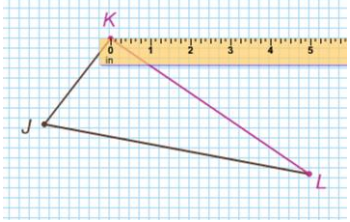


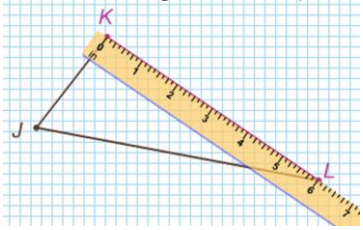




d. Let's measure the length of side $\overline{KL}$.

1. First, match the 0 on the ruler with the vertex K.
2. Then, we align the ruler with side $\overline{KL}$, making sure to keep the 0 on vertex K.



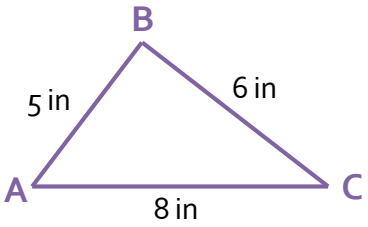


$\overline{KL}$ $6\ in$

3. The length of side is .

III) Perimeter of a Triangle

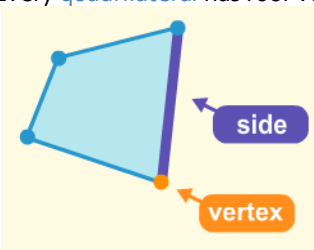
a. **Write this down:** Perimeter of a Triangle



1. The sum of the lengths of all the sides of a triangle is called its perimeter.
2. $5\ in + 6\ in + 8\ in = 19\ in$

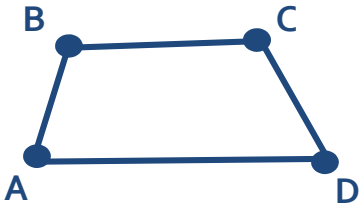
IV) Quadrilaterals and Perimeter

a. Every quadrilateral has four vertices and four sides.

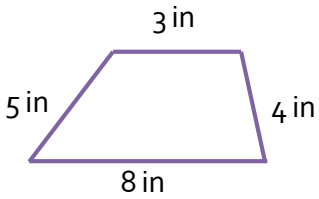


b. **Write this down:**

1. Every quadrilateral has 4 vertices.
   (i) A, C, C, and D are the vertices of quadrilateral $ABCD$.
2. Every quadrilateral has 4 sides.
   (i) AB, BC, CD, and AD are the sides of quadrilateral $ABCD$.



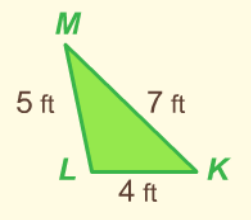
c. **Write this down:**



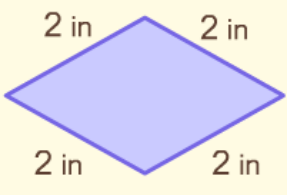
1. $3\ in + 5\ in + 4\ in + 8\ in = 20\ in$
2. The sum of the lengths of all the sides of a quadrilateral is called its perimeter.

Key Problems for Practice

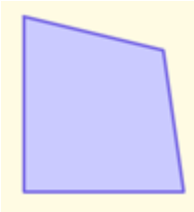
1. The triangle's sides have the following lengths: $5\ ft$, $7\ ft$, and $4\ ft$. Find its perimeter.



2. The perimeter of this quadrilateral is ☐ in.



3. This quadrilateral's perimeter is *20 ft*. The sum of the lengths of three sides is *15 ft*. Find the length of the fourth side.



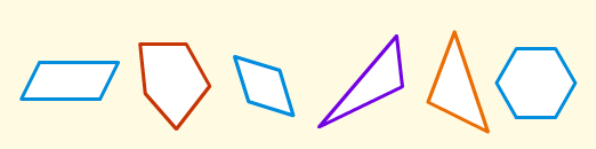
4. Which of the following is correct?

    a. A triangle has more vertices than sides.

    b. A triangle has the same number of sides and vertices.

    c. A quadrilateral has fewer sides than vertices.

5. Color all the quadrilaterals.



: One-Step Word Problems

Objective 25 Curriculum Highlights

Related TEKS

2.4C, 2.4D

Related Student Expectations

- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000

Foundational RM Prerequisites

- "More Than" and "Less Than" Word Problems
- Mental Addition and Subtraction within Twenty

Vocabulary

Key Theory Material

I) : One-Step Word Problems

a. Different questions can be asked about the same story. Read carefully, and always think about what you are being asked to find! For example,

1. Billy cracked [illegible] almonds with a nutcracker. With the binoculars, Billy cracked 6 more almonds than he did with the nutcracker. How many almonds did Billy crack with the binoculars?
   (i) Shorthand:
   Nutcracker: [illegible] almonds
   Binocular: ? almonds, 6 almonds more than

2. Billy cracked [illegible] almonds with a nutcracker. With the binoculars, Billy cracked 13 almonds. How many almonds did Billy crack?
   (i) Shorthand:
   Nutcracker: [illegible] almonds
   Binoculars: 13 almonds
   } ? almonds

b. **Write this down:**

1. Higgie gave Albert the camel $\frac{11}{16}$ white flowers and 2 red ones to eat. How many flowers did she give Albert?
2. Shorthand:
   White: $\frac{11}{16}$ flowers

Red: 2 flowers

3. Solution: ? flowers
   $14 + 2 = 16$ (flowers)
4. Answer: Higgie gave Albert 18 flowers.

Key Problems for Practice

1. To make 15-1 cups of Pirate Juice, it is necessary to mix 9 cups of apple juice, 5 cups of grape juice, and some cranberry juice. (Don't try this at home!) How many cups of cranberry juice are needed?

2. Oscar solved 5 easy problems and 2 hard problems. How many problems did Oscar solve?

3. Sir Andrew's castle has 17 windows. That is 4 windows more than Sir Diego's castle. Sir Ludwig's castle has as many windows as Sir Diego's castle has. How many windows does Sir Ludwig's castle have?

4. Captain Eagle is practicing archery. Yesterday, he hit the target 5 times and missed 3 times. Today he hit the target 9 times and missed 3 times. How many times did he hit the target over these 2 days?

5. 2-Ring gave this solution to a word problem: $18 - 6 = 12(ft)$. Which of these problems could 2-Ring have solved? Check all that apply:

   a. Romero's ladder extends up to 18 feet long. Alonzo's ladder is 6 feet shorter. How long is Alonzo's ladder?

   b. Becky's neighbors want to build an 18-foot tall chimney. They have already built the first 6 feet. How many feet do they have left to go?

   c. Little Gilbert is learning to swim. On Monday he could swim 12 feet, and on Thursday he could already swim 6 feet more. How many feet could Gilbert swim on Thursday?

Problems with Two Questions

Objective 26 Curriculum Highlights

Related TEKS

2.4C, 2.4D

Related Student Expectations

- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000

Foundational RM Prerequisites

- : One-Step Word Problems

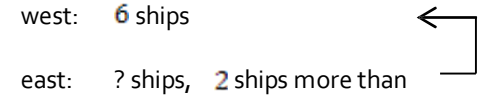
Vocabulary

Key Theory Material

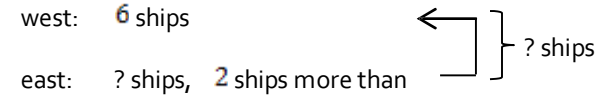
I) Problems with Two Questions: Part 1

a. 6 ships sailed west. 2 more ships sailed east than sailed west. How many ships sailed east? How many ships were there in total?

1. This problem asks 2 questions. We answer both questions, one at a time.
2. As always, writing the problem in shorthand helps!
   (i) First, we write the shorthand with just Question 1.



   (ii) Now we add Question 2 to the shorthand.
   (a) Remember, "}?" is shorthand for "find the total."



   (iii) Now the shorthand shows both of the problem's questions. Now let's answer the questions, one at a time.

b. **Write this down:**
6 ships sailed west. 2 more ships sailed east than sailed west. How many ships sailed east? How many

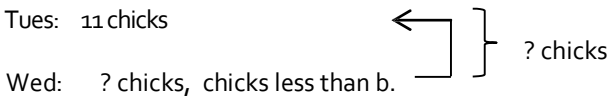
ships were there in total?

1. How many ships sailed east?
   (i) $6 + 2 = 8$ (ships)
2. How many ships were there in total?
   (i) 6 + 8 = 14 (ships)
3. Answer: 8 ships sailed east. In total, there were 14 ships.

II) Problems with Two Questions: Part 2

a. On a farm, 11 chicks hatch on Tuesday, and 5 fewer chicks hatched on Wednesday. How many chicks hatched on Wednesday? How many chicks hatched in total?

1. When we have *two* questions we answer them in *two* steps.
2. Shorthand:



Write this down:

On a farm, 11 chicks hatched on Tuesday, and 5 fewer chicks hatched on Wednesday. How many chicks hatched on Wednesday? How many chicks hatched in total?

1. How many chicks hatched on Wednesday?
   (i) $11 - 5 = 6$ (chicks)
2. How many chicks hatched in total?
   (i) $11 + 6 = 17$ (chicks)
3. Answer: 6 chicks hatched on Wednesday. 17 chicks hatched in total.

Key Problems for Practice

1. Choose a number $1 - 20$ to evaluate this expression: $17 - 6 + 3 = \square$

2. The mailman brought 5 packages today. He also brought 4 more letters than packages. How many letters did he bring? How many packages and letters did he bring altogether?

3. Choose the problem that matches this solution:

   6 mi – 4 mi = 2 mi
   2 mi + 6 mi = 8 mi

   a. To get to a troll's cave, you have to walk 6 miles through a forest, and then you have to climb over some rocks for 4 more miles than you walked. For how many miles do you have to go over the rocks? Find the total number of miles you must walk and climb to get to the troll's cave.

   b. The Math Pirate flew 8 miles in a hot air balloon. He then landed on a boat and sailed 4 fewer miles to the nearest island. How many miles in total did the Math Pirate travel?

   c. A soccer player ran 6 miles in a game and 4 fewer miles in practice. How many miles in total did the soccer player run? How many miles did she run in practice?

4. Darryl paid $\$7$ for comic books and $\$2$ more than that for a picture book. How much did he pay for the picture book? How much money did he pay in total?

5. Shorthand:

   first day: 6 pages

   second day: 2 pages more than ? pages

   Which of the following solves the problem above?

   a. 6 + 2 = 8 (pages)

   b. 6 – 2 = 4 (pages)

   c. 6 + 2 = 8 (pages)
      6 + 8 = 14 (pages)

   d. 6 – 2 = 4 (pages)
      6 + 4 = 10 (pages)

Step-by-Step Solutions for Two-Step Problems

Objective 27 Curriculum Highlights

Related TEKS

2.4C, 2.4D, 2.7C

Related Student Expectations

- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000
- Fully covers representing addition word problems where unknowns may be any one of the terms in the problem
- Fully covers representing subtraction word problems where unknowns may be any one of the terms in the problem
- Fully covers solving addition word problems where unknowns may be any one of the terms in the problem
- Fully covers solving subtraction word problems where unknowns may be any one of the terms in the problem

Prerequisite RM Objectives

- Problems with Two Questions

Vocabulary

helper question

Key Theory Material

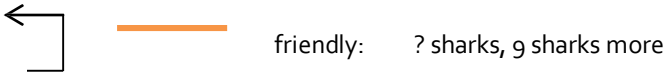
I) Two-Step Problems with One Question

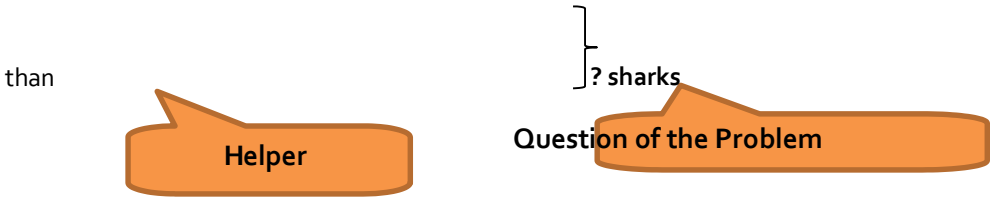
a. While underwater, Mortimer discovered 11 new plants, and Becky discovered 2 fewer. In total, how many new plants did they discover?

1. The Question of the Problem is: "In total, how many new plants did they discover?"
   (i) We cannot answer the question of the problem in one step, because we do not know how many new plants Becky discovered.
   (ii) To solve the problem, we need to answer another question first: "How many new plants did Becky discover?"
2. The problem asks us one question. And we ask another one. We call this a helper question, because it helps us solve the problem.

b. **Write this down:**

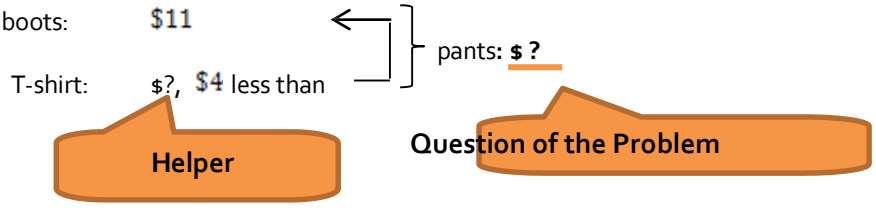
1. 3 angry sharks and 9 more friendly sharks than angry ones are swimming around a boat. How many sharks in total are swimming around the boat?
2. angry: 3 sharks





II) 2-Step Problems on Finding a Total when the Question is Asked Indirectly

a. **Write this down:**



2. The T-shirt costs: $11 - 4 = 7$ (dollars)
3. The boots and T-shirt together cost: $11 + 7 = 18$ (dollars). This is also how much the pants cost.
4. Answer: The pants cost 18.

Key Problems for Practice

1. A jump rope costs $7, a hula hoop is $2 less than the jump rope, and an action figure is $3 more than the jump rope. A remote control snake costs as much as the hula hoop and the jump rope cost together. How much does the remote control snake cost?

2. Tim and Mark are stegosauruses. Tim has 9 spikes on his spine. Mark has 2 more spikes than Tim. How many spikes do they have altogether?

3. Nick has 6 computer games. His brother Marcio has 4 more games than Nick. Their sister Erica has as many games as both of her brothers together. How many computer games does Erica have?

   a. Marcio has ☐ computer games.

   b. Altogether, Nick and Marcio have ☐ computer games.

   c. Erica has ☐ computer games.

4. On a beach, Alex found 6 round shells and some spiral shells. He found 4 more spiral shells than round shells. How many shells in total did Alex find?

   Which of the following solves the problem?

   a. $6 - 4 = 2$ (shells)
      $6 + 2 = 8$ (shells)
      Answer: Alex found 8 shells in total.

   b. 6 + 4 = 10 (shells)
      Answer: Alex found 10 shells in total.

   c. 6 + 4 = 10 (shells)
      $10 + 4 = 14$ (shells)
      Answer: Alex found 14 shells in total.

   d. 6 + 4 = 10 (shells)
      $6 + 10 = 16$ (shells)
      Answer: Alex found 16 shells in total.

   e. $6 - 4 = 2$ (shells)
      $4 - 2 = 2$ (shells)
      Answer: Alex found 2 shells in total.

5. 8 singing canaries and 3 fewer talking parrots are sitting in the trees of RM City. In total, how many birds are in the trees of RM City?

Two-Digit Numbers

Objective 28 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.2D, 2.4B

Related Student Expectations

- Prerequisite for using place value to compare whole numbers up to 1,200 using comparative language, numbers, and symbols (>, <, or =
- Prerequisite for using place value to order whole numbers up to 1,200
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of place value
- Introduces using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Introduces using standard form to representing numbers up to 1,200
- Introduces using word form to representing numbers up to 1,200
- Introduces using expanded form to representing numbers up to 1,200

Foundational RM Prerequisites

- The Second Ten: The Numbers from 11 to 20

Vocabulary

ten, twenty, thirty, forty, fifty, natural number, sixty, seventy, eighty, ninety, one hundred, round number, tens, ones, two-digit number

Key Theory Material

I) Ones and Tens

a. **Write this down:** Ones go in the right place. Tens go in the left place.
   1. For example:
      (i) 3 tens + 6 ones = 36 (ii)
      1 ten + 7 ones = 17

b. **Write this down:** 8 tens + 1 one = 81

II) The Names of Numbers

a. **Write this down**: Names of the numbers that we get when counting by tens:
   1. 1 ten = 10 Ten
   2. 2 tens = 20 Twenty

3. 3 tens = 30 Thirty
4. 4 tens = 40 Forty
5. 5 tens = 50 Fifty
6. 6 tens = 60 Sixty
7. 7 tens = 70 Seventy
8. 8 tens = 80 Eighty
9. 9 tens = 90 Ninety
10. 10 tens = 100 One hundred

b. **Write this down:** We read the number 35 as "thirty-five."
   1. For example, 56 is read as fifty-six.

III) Counting

a. When counting, we count from one number to the next, and then to the next…
   1. For example: one, two, three, four, five, six, seven,…

b. For every natural number, we get the next natural number by adding 1. c.
Write this down: The next number after 45 is: 46

d. For every natural number, we get the previous natural number by subtracting 1. e.
Write this down: The number that comes right before 45 is: 44

f. **Write this down:** The numbers 69, 70, 71, and 72 are between 68 and 73.
   1. We say this because 69, 70, 71, and 72 are all greater than 68, but less than 73.

IV) Two-Digit Round Numbers

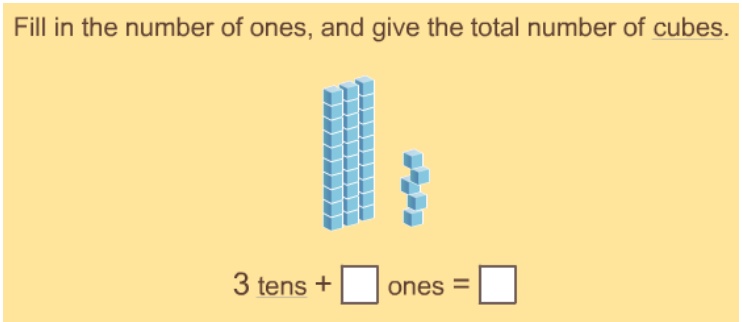
a. **Write this down**: The numbers that end with "0" are called round numbers.
   1. Examples of round numbers: 10, 20, 30, 40, 50, 60, 70, 80, 90, 100

b. **Write this down:** 20 is the round number previous to 30. 40 is the round number that comes next after 30.

Key Problems for Practice

1. 5 tens + 2 ones = _____

2.



3. 58 = 5 tens and _____ ones

4.

This group has four numbers that come one right after the other. Put them in order from least to greatest.

54 47 48 84 43 64

67 21 49 59 50 23

5.

Which of the following are NOT true? Check all that apply.

A ☐ 48 = 40 + 9

B ☐ 53 = 50 + 3

C ☐ 81 = 70 + 1

D ☐ 15 = 8 + 7

Comparing Numbers up to 100

Objective 29 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.2D, 2.4B

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of place value
- Introduces generating a number that is greater than or less than a given whole number up to 1,200
- Introduces using place value to compare whole numbers up to 1,200 using comparative language, numbers, and symbols (>, <, or =
- Introduces using place value to order whole numbers up to 1,200
- Maintains or enriches using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using standard form to representing numbers up to 1,200
- Maintains or enriches using word form to representing numbers up to 1,200
- Maintains or enriches using expanded form to representing numbers up to 1,200

Foundational RM Prerequisites

- The Second Ten: The Numbers from 11 to 20

Vocabulary

greater

Key Theory Material

I) Comparing Numbers with Different Numbers of Tens

a. When comparing two numbers, the number that comes later when we count is greater. b.

Write this down: Comparing 74 and 42

1. 74 has 7 tens. 42 has 4 tens.
2. The number with more tens is greater, so: (i)
   74 > 42, or
   (ii) 42 < 74

II) Comparing Numbers with the Same Number of Tens

1. When two numbers have the same number of tens, we must compare the ones digits in each number to determine which is the larger number.

2. **Write this down:** Comparing 45 and 47
   (i) 45 and 47 have the same number of tens. 47 has more ones than 45, since 7 > 5, so:
      (a) 47 > 45, or
      (b) 45 < 47

Key Problems for Practice

1. Choose the correct sign (< . >, or =):
   a. 32 ____ 49
   b. 73 ____ 79
2. We know that 46 < 59. Which of the following inequalities is true?
   a. 59 = 46
   b. 59 < 46
   c. 59 > 46
3. Becky's picture book has 27 pictures or princesses and 34 pictures of knights. Which type of picture does it have less of?
   a. Princesses.
   b. It has the same number of pictures of princesses and knights.
   c. Knights.
4. Compare the expressions using the correct sign (<, >, or =): 16 + 3 ____ 15 + 2

Adding and Subtracting with Round Numbers

Objective 30 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.2D, 2.4A, 2.4B, 2.4C, 2.4D, 2.7B

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces using an understanding of place value to determine the number that is 10 or 100 more or less than a given number up to 1,200
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
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- Maintains or enriches using word form to representing numbers up to 1,200
- Maintains or enriches using expanded form to representing numbers up to 1,200
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Mental Addition and Subtraction within Twenty
- Two-Digit Numbers

Vocabulary

fact family amount

Key Theory Material

I) : Two-Digit Numbers

a. Tens go to the left, ones go to the right.
   1. For example: 82 = 8 tens + 2 ones, NOT 2 tens + 8 ones.

II) Adding One-Digit Numbers to Round Numbers

a. **Write this down:** Any two-digit number is the sum of a round number and a one-digit number.
   1. Examples: 63 = 60 + 3 , 46 = 40 + 6

b. **Write this down**: This is how we add a round number and a one-digit number:
   1. 40 + 7 = 47
   2. 80 + 2 = 82
   3. 50 + 9 = 59

III) Subtracting to a Round Number

a. When you subtract the amount in the ones place of a two-digit number from that two-digit number, your result will be a round number.

b. **Write this down:** 24 – 4 = 20

IV) Subtracting to a One-Digit Number

a. When you subtract the number of tens in a two-digit number from that two-digit number, your result will be the amount in the ones place of the original two-digit number.

b. **Write this down:** 24 – 20 = 4

V) Addition and Subtraction Fact Families

a. A fact family is a group of equations using the same three numbers in alternating positions to add or subtract and find a result.

b. **Write this down:** Remember that 45 is 40 and 5, and you will know all of this:
   1. 40 + 5 = 45
   2. 5 + 40 = 45
   3. 45 – 5 = 40
   4. 45 – 40 = 5

Key Problems for Practice

1. 7 tens + 3 ones = _____

2. ____ tens + 7 ones = 37

3. Alison lost 30 toy cars this year. Her sister lost 7 dolls. In total, how many toys did they lose?

4. What number do you need to subtract from 64 to get 60?

5. What do you get if you add the greater of 20 and 50 to 7?

Addition and Subtraction of Round Numbers

Objective 31 Curriculum Highlights

Related TEKS
2.2A, 2.2B, 2.2D, 2.4A, 2.4, 2.4C, 2.7B

Related Student Expectations
♦ Introduces adding up to four two-digit numbers using mental strategies based on knowledge of place value
♦ Introduces adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
♦ Introduces adding up to four two-digit numbers using algorithms based on knowledge of place value
♦ Introduces adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
♦ Introduces subtracting two-digit numbers using mental strategies based on knowledge of place value
♦ Introduces subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
♦ Introduces subtracting two-digit numbers using algorithms based on knowledge of place value
♦ Introduces subtracting two-digit numbers using algorithms based on knowledge of properties of operations
♦ Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms

- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
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- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Adding and Subtracting with Round Numbers

Vocabulary

Key Theory Material

I) Adding Round Numbers

a. To add two round numbers, we simply add the number of tens in the first number to the number of tens in the second number.
b. **Write this down:** Adding tens to tens:
   1. 5 tens + 3 tens = 8 tens
   2. 50 + 30 = 80

II) Subtracting Round Numbers

a. To subtract two round numbers, we simply subtract the number of tens in the second number from the number of tens in the first number.
b. **Write this down:** Subtracting tens from tens:
   1. 6 tens – 2 tens = 4 tens
   2. 60 – 20 = 40
c. Mental Math: 8 tens – 3 tens = 5 tens, therefore 80 – 30 = 50

Key Problems for Practice

1. 6 tens + 3 tens = _____

2. 50 + 20 = _____ ; 50 – 20 = _____

3. 20 purple flowers, 30 red flowers, and 40 white flowers grew on the heads of flowerlings. How many flowers were there in total?

4. 70 + 20 – 50 = _____

5. In a school quiz game, Mila earned 30 points, Leo earned 2 tens more than Mila, and Judy earned as many as Leo and Mila together. How many points did Judy earn?

Adding and Subtracting a One-Digit Number

Objective 32 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
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- Maintains or enriches using expanded form to representing numbers up to 1,200
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Adding and Subtracting of Round Numbers

Vocabulary

Key Theory Material

I) Adding a One-Digit Number to a Two-Digit Number

a. When you add a one-digit number to a two-digit number, break the two-digit number into its tens and ones. Then add the ones digit to the one-digit number, and then add the result to the amount of tens in the two-digit number.

b. **Write this down:** Mental Math: Adding a One-Digit Number to a Two-Digit Number

1. 42 is a round number (40) plus a one-digit number (2).
2. Add the ones first. Then add that result to 40.
3. 42 + 5 = 40 + 7 = 47

II) Subtracting a One-Digit Number from a Two-Digit Number

a. When you subtract a one-digit number from a two digit number, break the two-digit number into its tens and ones. Then subtract the one-digit number from the ones digit from the two-digit number, and then add the result to the amount of tens in the two-digit number.

b. **Write this down:** Mental Math: Subtracting a One-Digit Number from a Two-Digit Number

1. 24 is a round number (20) plus a one-digit number (4).
2. Subtract the ones first. Then add that result to 20.
3. 24 – 3 = 20 + 1 = 21

Key Problems for Practice

1. 34 + 3 = _____

2. Sammy has to deliver 57 packages and has already delivered 3 of them. How many packages does he have left to deliver?

3. A baby pterodactyl was learning to fly. He spent 25 minutes practices, but only 4 minutes actually flying. How much time did he spend practicing, but not actually flying?

4. Molly's grandfather is 65 years old. Molly's father is 30 years younger than that. How old will Molly's father be in 4 years?

Mental Addition and Subtraction of a Two-Digit Number and a Round Number

Objective 33 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D, 2.7B

Related Student Expectations

- Introduces adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Introduces adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Introduces adding up to four two-digit numbers using algorithms based on knowledge of place value
- Introduces adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces subtracting two-digit numbers using mental strategies based on knowledge of place value
- Introduces subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Introduces subtracting two-digit numbers using algorithms based on knowledge of place value
- Introduces subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces using an understanding of place value to determine the number that is 10 or 100 more or less than a given number up to 1,200
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000
- Maintains or enriches using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
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- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Adding and Subtracting a One-Digit Number

Vocabulary

swapping summands

Key Theory Material

I) Adding a Two-Digit Number and a Round Number

a. When you add a two-digit number to a round number, break the two-digit number into its tens and ones.

Then add the number of tens to the round number, and then add the result to the amount of ones in the two-digit number.

b. **Write this down:** Mental Math: Adding a Two-Digit Number and a Round Number
   1. 54 is a round number (50) plus a one-digit number (4).
   2. Add the round numbers first. Then add the one-digit number.
   3. 54 + 40 = 90 + 4 = 94

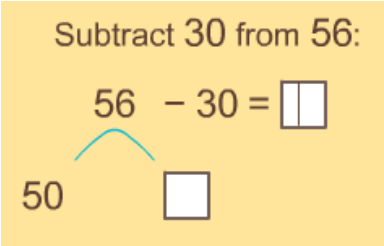
c. **Write this down:** Sometimes, swapping the order of the summands makes the calculation easier.
   1. For example: 30 + 51 = 51 + 30 = 80 + 1 = 81

II) Subtracting a Round Number from a Two-Digit Number

a. When you subtract a round number from a two digit number, break the two-digit number into its tens and ones. Then subtract the round number from the number of tens in the two-digit number, and then add the result to the amount of ones in the two-digit number.

b. **Write this down:** Mental Math: Subtracting a Round Number from a Two-Digit Number
   1. 98 is a round number (90) plus a one-digit number (8).
   2. Subtract the round numbers first. Then add the one-digit number.
   3. 98 – 30 = 60 + 8 = 68

Key Problems for Practice

1. 

2. Subtract 3 from 56: _____

3. The different between 39 and 2 is _____.

4. The length of a man's stride is 75 cm, and the length of a boy's stride is 50 cm. How many centimeters shorter is the boy's stride?

5. There are 30 days in April 31 days in May, and 30 days in June. How many total days are there in these three months?

Adding to Get a Round Number

Objective 34 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
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- Maintains or enriches using expanded form to representing numbers up to 1,200
- Maintains or enriches recalling basic facts to adding within 20 with automaticity

Foundational RM Prerequisites

- Mental Addition and Subtraction of a Two-Digit Number and a Round Number

Vocabulary

Key Theory Material

I) : Round Numbers

a. The numbers that end with "0" are called round numbers.
   1. For example: 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100 are all round numbers.
b. The round number previous to 40 is 30.
c. The round number that comes next after 40 is 50.

II) Adding to Get a Round Number

a. When you add a one-digit number to a two-digit number, think of the two-digit number as a round number plus a one-digit number. Then, add the ones to the ones. Last, add the result to the round number.
b. **Write this down:** Mental Math: Adding to Get a Round Number
   1. 36 is a round number (30) plus a one-digit number (6).
   2. Add the ones first. Then add that result to 30.
   3. 36 + 4 = 30 + 10 = 40

III) Subtracting a One-Digit Number from a Round Number

a. When you subtract a one-digit number from a round number, think of the round number as the sum of 10 and another round number. Then, subtract the one-digit number from 10. Last, add the remaining round number.
b. **Write this down:** Mental Math: Subtracting a One-Digit Number from a Round Number
   1. 50 is the sum of 40 and 10.
   2. Subtract the ones from the 10. Then add that result to 40.
   3. 50 – 7 = 40 + 3 = 43

Key Problems for Practice

1. 56 + 4 = _____

2. 50 – 4 = _____

3. Some knights went to a jousting tournament. 44 knights arrived on time, and 6 were late. How many knights

went to the tournament?

4. A cat has 30 teeth, and a dog has 42 teeth. How many more teeth does the dog have than the cat?

5. 30 canaries and 8 parrots were sitting in a tree. When they saw a cat, all the parrots and the same number of canaries flew away. How many canaries were left in the tree? How many birds flew away in total?

Adding and Subtracting One-Digit Numbers when Crossing over a Ten

Objective 35 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D

Related Student Expectations

- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Prerequisite for adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Prerequisite for adding up to four two-digit numbers using algorithms based on knowledge of place value
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- Prerequisite for subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Introduces solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving multi-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
- Introduces solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Introduces solving problem situations for a given mathematical number sentence involving subtraction of whole numbers within 1,000
- Maintains or enriches using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using concrete models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using pictorial models to decomposing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
- Maintains or enriches using standard form to representing numbers up to 1,200
- Maintains or enriches using word form to representing numbers up to 1,200
- Maintains or enriches using expanded form to representing numbers up to 1,200
- Maintains or enriches recalling basic facts to adding within 20 with automaticity
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Adding to get a Round Number

Vocabulary

Key Theory Material

I) Adding One-Digit Numbers When Crossing Over a Ten

a. When you add a one-digit number to a two-digit number and you cross over ten, add enough of the ones to the two-digit number to get the next round number. Then, add the remaining ones to the round number.

b. **Write this down:** Mental Math: Adding One-Digit Numbers when Crossing over a Ten

1. First, add to get the next round number.
2. Then, add the rest.
3. 28 + 3 = 30 + 1 = 31

II) Subtracting One-Digit Numbers When Crossing Over a Ten

a. When you subtract a one-digit number from a two-digit number and you cross over ten, subtract enough of the ones from the two-digit number to get the previous round number. Then, subtract the remaining ones from the round number.

b. **Write this down:** Mental Math: Subtracting One-Digit Numbers when Crossing over a Ten

1. First, subtract to get to the previous round number.
2. Then, subtract the rest.
3. 31 – 6 = 30 – 5 = 25

Key Problems for Practice

1. What one-digit number must you add to 74 to get a round number?

2. Mary got 28 red balloons and 8 blue balloons for her birthday. How many balloons in total did Mary get?

3. What one-digit number must you subtract from 74 to get a round number?

4. A scientist designed 27 new robots. 9 robots broke. How many robots still work?

5. Find the difference between the greatest and the least two-digit numbers. Add the sum of 1 and the greatest one-digit number to the result.

Column Addition Basics

Objective 36 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D

Related Student Expectations

- Fully covers adding up to four two-digit numbers using mental strategies based on knowledge of place value
- Fully covers adding up to four two-digit numbers using mental strategies based on knowledge of properties of operations
- Fully covers adding up to four two-digit numbers using algorithms based on knowledge of place value
- Fully covers adding up to four two-digit numbers using algorithms based on knowledge of properties of operations
- Fully covers solving one-step word problems involving addition within 1,000 using a variety of strategies based on place value, including algorithms
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- Fully covers solving problem situations for a given mathematical number sentence involving addition of whole numbers within 1,000
- Maintains or enriches using concrete models to composing numbers up to 1,200 in more than one way as a sum of so many thousands, hundreds, tens, and ones
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- Maintains or enriches recalling basic facts to adding within 20 with automaticity

Foundational RM Prerequisites

- Mental Addition and Subtraction within Twenty
- Two-Digit Numbers

Vocabulary

column addition carry over

Key Theory Material

I) : Ones and Tens

a. Ones go in the right place. Tens go in the left place.
   1. For example: The number sixty-three has 6 tens and 3 ones, and we write it with digits as 63

b. **Write this down:** In the number 28, 2 is in the tens' place and 8 is in the ones' place.

II) Column Addition

a. To add two-digit numbers, we can add the ones to the ones and the tens to the tens. Column addition is just a really nice way to write this down!
   1. First, we line up the numbers: ones under ones, tens under tens.
   2. Next, we add the ones to the ones. We place the result in the ones' place, under the line.
   3. Then, we add the tens to the tens. We place the result in the tens' place, under the line.

b. This poem might help you remember the rule:

When you need to do addition,
Put the numbers in position: Tens
to tens and ones to ones
Add them up, and then you're done!

c. **Write this down:** Examples of column addition:

```
  44        30
+ 15      + 68
  59        98
```

Add the ones to the ones, and the tens to the tens.

III) Carry Over!

a. If the sum of the ones is a two-digit number, column addition still works.
   1. First, add the ones to get a two-digit number. Place the ones' digit under the line in the ones' place, and carry the tens' digit to the top of the tens' column.
   2. Then, add all the numbers in the tens' column.

b. **Write this down:** This is how we add when carrying over:

```
 1
 33
+ 9
 42
```

c. **Write this down:** Steps for column addition of two-digit numbers:
   1. Line up the numbers
   2. Add the ones to the ones.
   3. If needed, carry over.
   4. Add all the numbers in the tens' column.

```
  1
  27
+ 33
  60
```

Key Problems for Practice

1. Find the sum: 30 + 40

2. Enter the second summand and find the sum 42 + 40

   42
   +____

3. Add the numbers: 31 + 50 = _____

4. Find the sum:

   64
   +31

5. Mom bought 15 cupcakes and 38 cookies, and Dad bought 25 cupcakes for a party. What did Mom and Dad buy more of, cupcakes, or cookies?

Column Subtraction Basics

Objective 37 Curriculum Highlights

Related TEKS

2.2A, 2.2B, 2.4A, 2.4B, 2.4C, 2.4D

Related Student Expectations

- Fully covers subtracting two-digit numbers using mental strategies based on knowledge of place value
- Fully covers subtracting two-digit numbers using mental strategies based on knowledge of properties of operations
- Fully covers subtracting two-digit numbers using algorithms based on knowledge of place value
- Fully covers subtracting two-digit numbers using algorithms based on knowledge of properties of operations
- Fully covers solving one-step word problems involving subtraction within 1,000 using a variety of strategies based on place value, including algorithms
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- Maintains or enriches using expanded form to representing numbers up to 1,200
- Maintains or enriches recalling basic facts to subtracting within 20 with automaticity

Foundational RM Prerequisites

- Column Addition Basics

Vocabulary

column subtraction | borrow and trade | minuend | subtrahend

Key Theory Material

I) Column Subtraction Without Crossing Over 10

a. **Write this down:** Column subtraction: subtract the ones from the ones, and the tens from the tens!

```
  27
 -14
  13
```

b. **Write this down:** Here is an example of column subtraction:

```
  49
  -8
```

41

II) Subtracting from a Round Number

a. When the minuend is a round number, we can't subtract the ones in the subtrahend from the ones in the minuend.
   1. To subtract from a round number, we borrow 1 ten from the tens' place and trade it for 10 ones.
   2. Now we can subtract ones from ones and tens from tens.

b. **Write this down:** Calculating 50 – 6 with column subtraction:

```
   4   10
   5    0
-      6
-------
   4    4
```

c. **Write this down:** Calculating 60 – 37 with column subtraction:
   1. Borrow 1 ten, trade it for 10 ones, and then subtract.

```
   5   10
   6    0
 - 3    7
-------
   2    3
```

III) Borrow and Trade

a. When we can't subtract the ones from the ones, we borrow and trade.
   1. First, we line up the numbers.
   2. Since we can't subtract the ones in the subtrahend from the ones in the minuend, we trade 1 ten for 10 ones: 1 ten = 10 ones.
   3. Then, we add these 10 ones to the ones already in the ones' place of the minuend.
   4. Now, we can subtract the ones in the subtrahend from the ones in the minuend. We place the result in the ones' place of the answer
   5. Then, we subtract the tens from the tens. We place the result in the tens' place of the answer. b.

Write this down: Calculating 71 – 48 with column subtraction:
   1. When we cannot subtract ones from ones, we borrow 1 ten from the tens' place.
   2. We trade 1 ten for 10 ones and add these to the ones in the ones' place.
   3. We subtract ones from ones and tens from tens.

```
   6   11
   7    1
 - 4    8
-------
   2    3
```

Key Problems for Practice

1. Find the difference: 80 – 60 = _____

2. Put the subtrahend in the correct place and find the difference between 98 and 40:

   9 8
   - _____

3. Put the subtrahend in the correct place and find the difference between 98 and 4.

   9 8
   - _____

4. Find the difference:

   4 4
   - 1 5

5. Shanti had $71. She spent $25 on books and CDs. How much money does she have left?

6. How much greater is the sum of 73 and 19 than the difference between them?