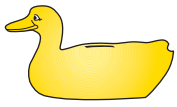
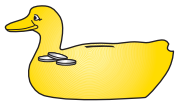
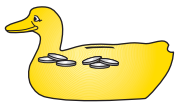
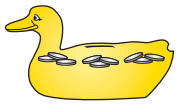
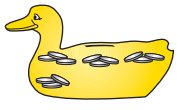
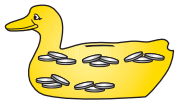
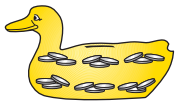
6–1 Class Activity

Name _____ Date _____

▶ Find the Total So Far

Noreen started to save money. Every day she put three $1 coins into her duck bank. Write how much money she had each day.

On Day 0 Noreen did not put money into her duck bank.		On Day 0 Noreen's duck bank was empty. She had $0.
1. On Day 1 Noreen put $3 into her bank.		On Day 1 Noreen had $_____ in her bank.
2. On Day 2 Noreen put $3 into her bank.		On Day 2 Noreen had $_____ in her bank.
3. On Day 3 Noreen put $3 into her bank.		On Day 3 Noreen had $_____ in her bank.
4. On Day 4 Noreen put $3 into her bank.		On Day 4 Noreen had $_____ in her bank.
5. On Day 5 Noreen put $3 into her bank.		On Day 5 Noreen had $_____ in her bank.
6. On Day 6 Noreen put $3 into her bank.		On Day 6 Noreen had $_____ in her bank.

7. **On the Back** Draw and write how much money Noreen would have in her bank on Day 7 and on Day 8.

Name _____ Date _____

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6–1 Class Activity

Name Date

Vocabulary
Multiplication Column Table

▶ Complete a Multiplication Column Table

This **Multiplication Column Table** shows Noreen's savings.

8. Fill in the rest of the table to show how much money Noreen saved each day and how much her total was each day.

Days	Dollars	
0	0	
1	3	+3
2		_____
3		_____
		_____
		_____
		_____
		_____
		_____

9. What did you write beside each column?

_____

10. What does the number beside each column show?

_____

_____

▶ Identify Multiplication Column Tables

These tables show four different ways Noreen could have saved money. Complete each table. Then decide which tables are Multiplication Column Tables and which are not. Explain why.

11.

Days	Dollars	
0	0	
1	2	+2
2		+2
3		+2
4		+2
5		+2
6		+2

_____

_____

_____

_____

_____

Name _____ Date _____

12.

Days	Dollars
0	0
1	4
2	12
3	18
4	20
5	24
6	28

+4

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

13.

Days	Dollars
0	0
1	7
2	14
3	21
4	28
5	35
6	42

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

14.

Days	Dollars
0	0
1	3
2	5
3	5
4	9
5	11
6	14

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

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Dear Family,

In our math class, we are exploring the ideas of ratio and proportion.

The ratio of one number to another is a simple way to express the relative size of two quantities or measurements. For example, the ratio of the lengths of the sides of this rectangle is 3 to 2.

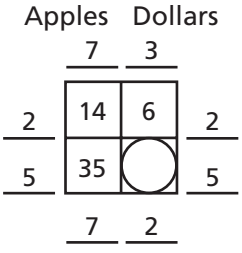
A proportion is an equation that shows two equivalent ratios. It can be written 14 : 6 = 35 : 15 or 14 : 6 : : 35 : 15.

Here is a proportion problem:
Grandfather bought 14 apples for $6. If I buy the same kind of apples, how much will 35 apples cost?

The problem makes this proportion:

$$14 : 6 = 35 : c$$

To solve it, we can put the ratios in a Factor Puzzle like your child has been solving all year.



c is $3 \times 5 = 15$

Ratio Table

Apples	Dollars
7	3
0	0
7	3
14	6
21	18
28	24
35	30
42	36

(+ 7 between each pair of rows; + 3 between each pair of rows)

The Factor Puzzle is from the rows of the ratio table that are ×2 and ×5 of the basic ratio 7 : 3. Factor Puzzles enable your child to understand and solve challenging proportion problems.

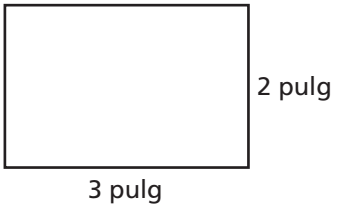
Discuss with your child any proportions you use in your life, such as doubling a recipe.

If you have any questions, please call or write to me.

Sincerely,
Your child's teacher

Estimada familia:

En la clase de matemáticas estamos explorando las razones y las proporciones.



La razón de un número a otro es una manera simple de expresar el tamaño relativo de dos cantidades o medidas. Por ejemplo, la razón de las longitudes de los lados de este rectángulo es de 3 a 2.

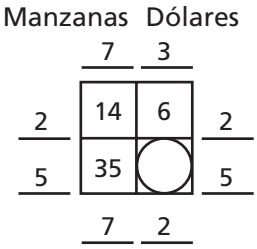
Una proporción es una ecuación que muestra 2 razones equivalentes. Se puede escribir 14 : 6 = 35 : 15 ó 14 : 6 : : 35 : 15

Éste es un problema de proporción:
El abuelo compró 14 manzanas con $6.
Si compro el mismo tipo de manzanas,
¿cuánto costarán 35 manzanas?

El problema hace esta proporción:

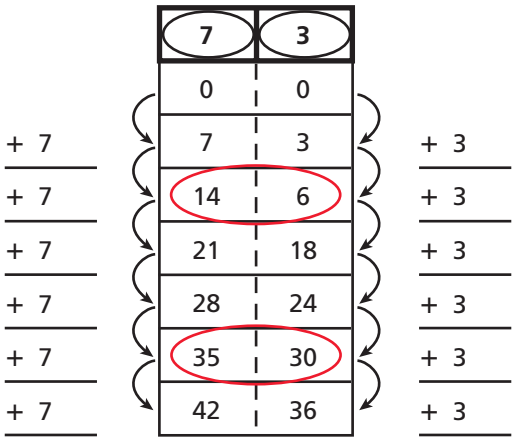
$$14 : 6 = 35 : c$$

Para resolverlo, podemos poner las razones en un rompecabezas de factores como los que su niño ha resuelto durante el año.



$$c \text{ es } 3 \times 5 = 15$$

Tabla de razones



El rompecabezas de factores se forma con las filas de la tabla que son × 2 y × 5 de la razón básica 7 : 3. Los rompecabezas de factores ayudan a su niño a comprender y resolver problemas complicados de proporciones.

Comente con su niño sólo las proporciones que usan en la vida diaria, tales como duplicar una receta de cocina.

Si tiene preguntas, por favor comuníquese conmigo.

Atentamente,
El maestro de su niño

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6–2 Class Activity

Name Date

Vocabulary

unit

▶ Use Unit Rate Language

Write each phrase in your own words. Do not use *per*.

1. 7 days per week _____
2. 9 feet *per* second _____
3. 9 books *per* shelf _____
4. $7 *per* sack of rice _____

▶ Use Different Units and Groups

Every Multiplication Column Situation is divided into **units**, and describes a constant group for each unit. Which of these are Multiplication Column Situations? For each one:

- tell the unit and group per unit
- write the situation using the word *per*.

5. In the zoo, 7 kangaroos live in each of the kangaroo living areas.

_____

_____

6. The band marched on the field one row at a time. There were six people in every row.

_____

_____

7. Pedro and Pilar collect snails. Each day they add 4 snails to their terrarium.

_____

_____

8. Last week Ben saw 3 films, this week he saw 4 films, and next week he will see 2 films.

_____

Name _____ Date _____

9. A hot-air balloon is rising up from the school baseball field. It rises 9 feet every second.

_____

_____

10. A bagging machine was set to place the same number of oranges in each bag. Today none of the settings stay fixed. The machine places 3 and then 5 and then 9 oranges in bags.

_____

11. Every day this week Joanne made 3 of her 7 free throws during basketball practice.

_____

_____

12. Sandy loves crossword puzzles. She can solve 8 clues each minute.

_____

_____

13. Farmer Brown is driving his tractor down his hilly and flat fields. He can plough 7 rows per hour on the flat field. On the hilly field he sometimes ploughs 6 and sometimes only 5 rows each hour.

_____

Make a Multiplication Column Table for the situations in exercises 5 and 6.

14.

Unit	Rate	
Living Area	Kangaroos	
0		
		+
		+
		+
		+
		+
		+

15.

Unit	Rate	
Rows	People	
0		
		+
		+
		+
		+
		+
		+
		+

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Name _____ Date _____

▶ Describe a Multiplication Column Situation

Decide if each situation is a Multiplication Column Situation. Write the unit and group for stories that are Multiplication Column Situations. Write "no" if it is not a Multiplication Column Situation.

1. Each fish tank has 4 snails to help keep the tanks clean.

   Unit: _____

   Group (the unit rate): _____

2. Everyone in the Green family had 2 eggs for breakfast yesterday

   Unit: _____

   Group (the unit rate): _____

3. Tara makes 9 drawings on each page of her sketchbook.

   Unit: _____

   Group: _____

4. Erin puts 3 large photos on 1 shelf and 7 small photos on 1 shelf.

   Unit: _____

   Group: _____

5. Jonathan saves $8 every week, but last week he spent some of his savings to go to a movie.

   Unit: _____

   Group: _____

6. Fred planted 7 tomato vines in each yard he takes care of.

   Unit: _____

   Group: _____

7. Mr. Gomez used 3 boxes of markers in his classroom last week. This week he used 2 boxes of markers.

   Unit: _____

   Group: _____

Name _____ Date _____

8. Abby uses 2 cups of flour in each loaf of bread she makes.

   Unit: _____

   Group: _____

9. Laurie saved the same amount of money each week. After 10 weeks she had $80.

   Unit: _____

   Group: _____

▶ Write a Definition

10. Write a definition of Multiplication Column Situation and discuss your definition.

_____

_____

_____

▶ Identify Multiplication Column Tables

Decide whether each table is a Multiplication Column Table. Explain why or why not.

11. _____ _____

0	0
1	9
2	18
3	27
4	36
5	45

_____

_____

12. _____ _____

0	0
1	4
2	5
3	9
4	10
5	14

_____

_____

13. _____ _____

0	0
1	11
2	22
3	33
4	44
5	55

_____

_____

14. _____ _____

0	0
1	3
2	5
3	8
4	10
5	13

_____

_____

15. Write in your Math Journal or tell a different story for each table. Then label each table.

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6–4 Class Activity

Name Date

Vocabulary
- Linked Multiplication Column Table
- Ratio Table

▶ Linked Multiplication Column Table Situations

Noreen saves $3 a day. Tim saves $5 a day. They start saving on the same day. The **Linked Multiplication Column Table** and the **Ratio Table** show Noreen's and Tim's savings.

Linked Multiplication Column Table

	Noreen	Tim
Days	(3)	(5)
0	0	0
1	3	5
2	6	10
3	9	15
4	12	20
5	15	25
6	18	30
7	21	35

Ratio Table

+3	N	T	+5
	3	5	
+	0	0	+
+	3	5	+
+	6	10	+
+	9	15	+
+	12	20	+
+	15	25	+
+	18	30	+
+	21	35	+

1. How are the tables alike? How are they different?

2. Fill in the numbers at each side of the Ratio Table to show Noreen's and Tim's constant increases.

Use the tables to answer each question.

3. Noreen has saved $12. How much has Tim saved? On which day is this?

4. Tim has saved $35. How much has Noreen saved? On which day is this?

5. On what day will Noreen have $30 in her duck bank? How much will Tim have then?

6–4 Class Activity

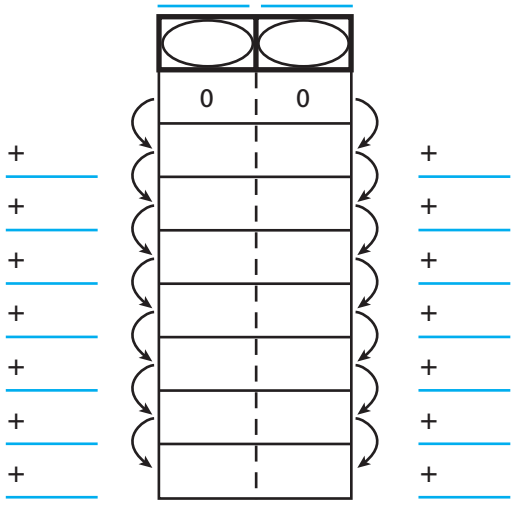
Name _____ Date _____

▶ Create a Ratio Table

Noreen and Tim bought lots of bags of oranges. Each of Tim's bags cost $6, but Noreen paid only $2 for each bag on sale.

6. Complete the tables for Noreen and Tim. The linking unit is bags of oranges.

Ratio Table

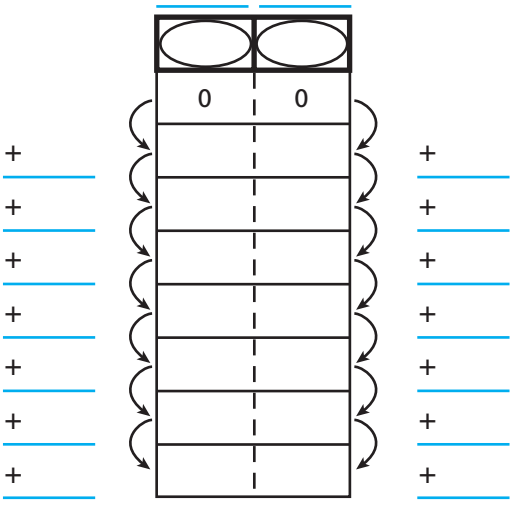


7. How much did 2 bags of oranges cost Noreen? _____ Tim? _____ How much did 4 bags of oranges cost Noreen? _____ Tim? _____

Noreen and Tim plant carrots in their garden. Noreen plants 4 carrot seeds in each row. Tim plants 9 carrot seeds in each row.

8. Fill in the table about Noreen and Tim. The linking unit is _____.

Ratio Table



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Name Date

9. How many carrot seeds will Noreen and Tim each have planted after they have planted 3 rows? _____
6 rows? _____
7 rows? _____

Noreen makes 5 drawings on each page of her sketchbook. Tim makes smaller drawings, so he has 7 drawings on each page of his sketchbook.

10. Fill in the tables. The linking unit is _____.

Linked Multiplication Column Table

	_____	_____
0	0	0
1		
2		
3		
4		
5		
6		
7		

Ratio Table

	_____	_____
	0	0
+ _____			+ _____
+ _____			+ _____
+ _____			+ _____
+ _____			+ _____
+ _____			+ _____
+ _____			+ _____
+ _____			+ _____

11. What do your tables show about Noreen's and Tim's sketchbooks?

_____

_____

How many drawings do Noreen and Tim each have after they have filled 3 pages? _____
How many would each have after 5 pages?

_____

How many would each have after 10 pages?

_____

How many would each have after 101 pages?

_____

Name _____ Date _____

▶ Recognize Ratio and Non-Ratio Tables

12. Which two tables could be Linked Multiplication Column Tables for Noreen and Tim stories? Why?

A.

0	0	0
1	4	7
2	8	14
3	12	21
4	16	28
5	20	35
6	24	42
7	28	49
8	32	56
9	36	63
10	40	70

B.

0	0	0
1	1	5
2	2	12
3	4	18
4	7	20
5	9	24
6	15	30
7	19	33
8	24	42
9	25	48
10	30	50

C.

0	0	0
1	2	9
2	4	18
3	6	27
4	8	36
5	10	45
6	12	54
7	14	63
8	16	72
9	18	81
10	20	90

D.

0	0	0
1	2	3
2	5	6
3	7	9
4	11	12
5	13	15
6	16	18
7	20	21
8	22	24
9	23	27
10	28	30

13. Why are the other tables not Linked Multiplication Column Tables?

14. Tell a Noreen and Tim story for each of the Linked Multiplication Column Tables above.

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6–5 Class Activity

Name Date

Vocabulary

proportion
basic ratio

▶ Proportions and Factor Puzzles

A **proportion** problem comes from a ratio situation. It uses two rows from a Ratio Table. Two multiples of a ratio make a proportion.

A proportion is written in the form

$$28 : 12 = 70 : 30$$

or

$$28 : 12 : : 70 : 30$$

This proportion is read as "28 is to 12 as 70 is to 30."

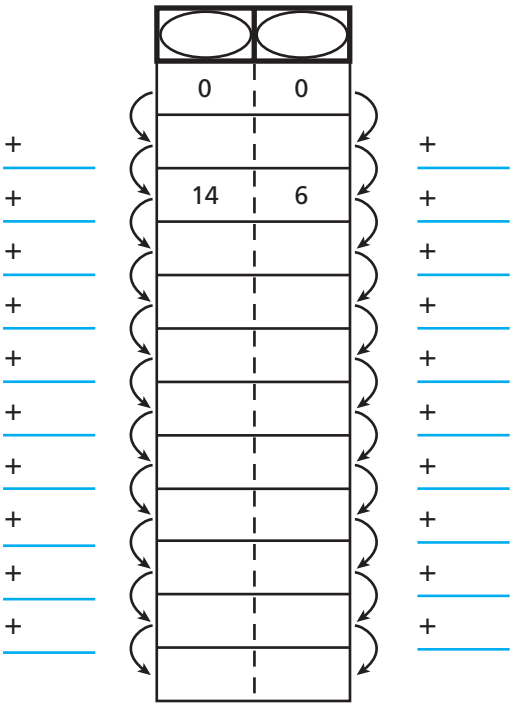
Here is a proportion problem:
Grandfather bought 14 apples for $6. If I buy the same kind of apples, how much will 35 apples cost?

The problem makes this proportion:

$$14 : 6 = 35 : c$$

To solve the proportion and the problem, you need to find the value of *c*.

Ratio Table



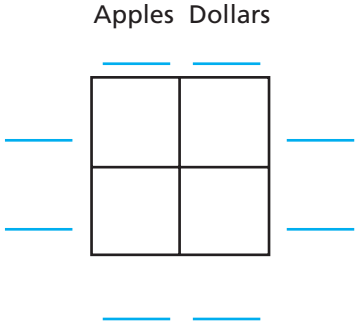
1. Fill in the Ratio Table for the problem.

2. Circle the rows of the Ratio Table that make the proportion problem.

You know how to solve Factor Puzzles. It is faster to make a Factor Puzzle than a whole ratio table.

3. Fill in the Factor Puzzle using the numbers in the rows you circled.

Factor Puzzle



4. What is the solution to the apple proportion?

_____

_____

5. You wrote numbers above the Factor Puzzle. Where are they in the ratio table?

_____

This top row of the Ratio Table can be called the **basic ratio**. It is from the _____ row of the multiplication table.

6–5 Class Activity

Name _____ Date _____

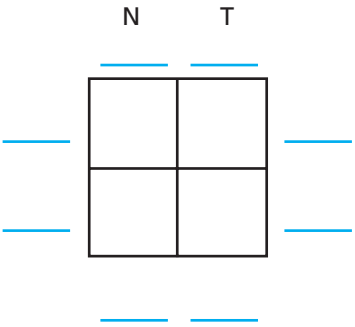
Vocabulary
Factor Puzzle

▶ Solve Proportion Problems

A proportion problem gives you three of the four numbers in a proportion. You can solve a proportion problem by making a Factor Puzzle to show those 2 rows of the Ratio Table.

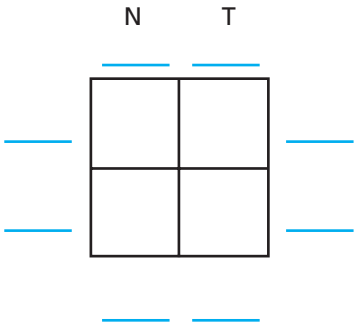
Use Factor Puzzles to solve these proportion problems about Noreen and Tim.

6. When Noreen planted 6 tomatoes, Tim planted 10 tomatoes. If Noreen plants 21 tomatoes, how many will Tim plant?



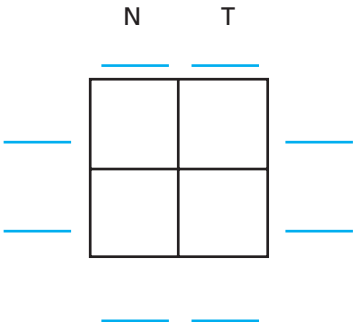
_____

7. When Noreen had 6 stickers, Tim had 21 stickers. How many stickers will Noreen have when Tim has 56?



_____

8. Noreen did 72 push-ups while Tim did 32 push-ups. Earlier, while Tim did 12 push-ups, how many did Noreen do? _____



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Name _____ Date _____

▶ Solve on Your Own

Solve these proportion problems about the twins, Diana and Walter. For each problem, make and solve a Factor Puzzle. For problems 9 and 10, use the basic ratio you find beside the Factor Puzzle to make a Ratio Table. Circle the rows of the Ratio Table that make the Factor Puzzle.

9. Diana read 15 pages and Walter read 35. How many pages had Diana read when Walter had read 14?

_____

0	0

10. Diana sold 35 tickets and Walter sold 56. How many tickets had Walter sold when Diana had sold 15?

_____

0	0

11. Diana sliced 30 bananas while Walter sliced 20. When Diana had sliced 21 bananas, how many had Walter sliced?

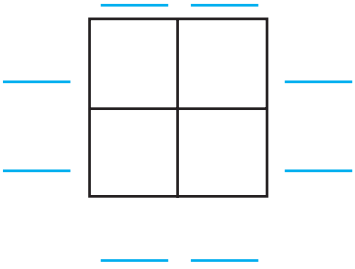
_____

Name _____ Date _____

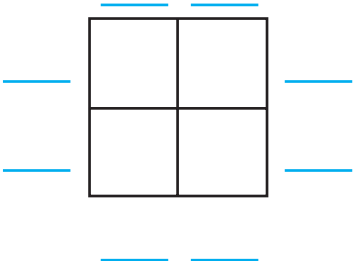
▶ Think About Proportions

Make Factor Puzzles to solve the proportion problems below. Tell what you assume about each proportion problem. Label each Factor Puzzle. Circle the unknown number in each puzzle and use it to answer the question.

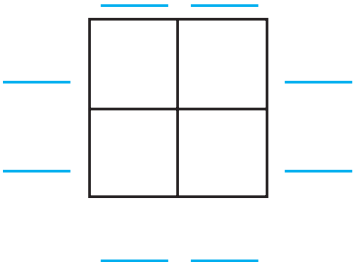
12. Two bands march onto the football field. When Band 1 has 15 people on the field, Band 2 has 6. When Band 2 has 14 people on the field, how many people will Band 1 have?



13. Joshua has 32 angelfish for every 12 snails. When he has 72 angelfish, how many snails will he have?



14. Ann planted 25 rose bushes while Ivan planted 30. How many rose bushes had Ivan planted when Ann had planted 15?



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Name _____ Date _____

▶ Solve Problems With Factor Puzzles

Circle the number of each problem that is a proportion problem, and then solve it with a Factor Puzzle. Find the basic ratio in each Factor Puzzle. If a problem is not a proportion problem, tell why.

1. John can plant 7 tomato vines in the time it takes Joanna to plant 4 tomato vines. How many tomato vines will Joanna have planted when John has planted 42 tomato vines?

_____

_____

2. Mr. Tally's class uses 2 bags of markers each week. Ms. Petro's class uses 3 bags of markers one week and 2 the next. If Mr. Tally used 14 bags of markers, how many did Ms. Petro use?

_____

_____

3. In the summer Jason's pond had 14 minnows for each 6 goldfish. Now it has 27 goldfish. How many minnows does it have now?

_____

_____

4. Tom is 12 years old. He is 8 years older than his sister Sylvia. How old were Tom and Sylvia 3 years ago?

_____

_____

6–6 Class Activity

Name Date

▶ Factor Puzzle Multiples in a Ratio Table

Central Middle School has 6 computers and 14 printers. If East Middle School in the same district has 28 printers, how many computers does it have?

Here is the Factor Puzzle for this problem. Use the basic ratio from the top of the Factor Puzzle to fill in the Ratio Table.

	C	P	
	3	7	
2	6	14	2
4	12	28	4
	3	7	

◯ : ◯
0 : 0

5. How do the numbers 2 and 4, which are at the sides of the Factor Puzzle, relate to the Ratio Table?

_____

6. Where are they in the multiplication table?

_____

Solve the problems below. Make your own Factor Puzzles if you need them.

When there are 6 banana slices in Diana's fruit salad, there are 14 orange pieces.

Show your work.

7. When there are 28 orange pieces in the fruit salad, how many banana slices are there?

_____

8. When there are 56 orange pieces in the fruit salad, how many banana slices are there?

_____

9. When there are 18 banana slices in the fruit salad, how many orange pieces are there?

_____

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6–7 Class Activity

Name _____ Date _____

▶ Solve Numeric Proportion Problems

Solve each proportion by making a Factor Puzzle on another sheet of paper. Then write the basic ratio for each.

1. _____ : 32 = 15 : 40 _____

2. 16 : 36 = _____ : 63 _____

3. 42 : _____ = 54 : 63 _____

4. 14 : 56 = 6 : _____ _____

▶ Identify and Solve Proportion Problems

Tell which are proportion problems. Explain why the others are not. Solve the proportion problems using Factor Puzzles or another method.

5. A bag of 6 oranges costs $2. How many oranges will I get for $10?

6. Cal is 19 and his sister is 13. How old was Cal when his sister was 8?

7. You can make 8 pies from 30 pounds of apples. How many pies can you make from 15 pounds of apples?

8. In the zoo, there are 6 flamingos for every 8 ducks. If there are 20 ducks, how many flamingos are there?

9. Alice is a mail carrier. Today she is delivering letters on Maple Street. She has letters for people living in houses #4 and #6. If she has letters for house #20, what other house do you think she may have letters for?

10. Dana and Sue are sisters. Every week the sisters get an allowance. Dana is older than Sue so she gets more allowance. Now Dana has $48 and Sue has $36. How much will Dana have when Sue has $54?

6–7 Class Activity

Name _____ Date _____

▶ Find the Table That Matches a Problem

Cross out the table that is not a Ratio Table. Circle the rows in each Ratio Table for the proportion. Fill in the basic ratio in the blue circles. Write which story from the previous page is represented by each table. One table does not represent a story.

11.

◯ : ◯
0 : 0
1 : 3
2 : 6
3 : 9
4 : 12
5 : 15
6 : 18
7 : 21

_____

12.

◯ : ◯
0 : 0
6 : 2
12 : 4
18 : 6
24 : 8
30 : 10
36 : 12
42 : 14
48 : 16

_____

13.

◯ : ◯
0 : 0
4 : 3
8 : 6
12 : 9
16 : 12
20 : 15
24 : 18
28 : 21
32 : 24
36 : 27
40 : 30
44 : 33
48 : 36

_____

14.

◯ : ◯
0 : 0
1 : 0
2 : 0
3 : 0
4 : 0
5 : 0
6 : 0
7 : 1
8 : 2
9 : 3
10 : 4
11 : 5
12 : 6
13 : 7
14 : 8
15 : 9
16 : 10
17 : 11
18 : 12
19 : 13
20 : 14

_____

15. On a separate sheet of paper, choose one of your favorite Multiplication Table situations that you wrote on an earlier day and change it to a proportion problem. Make a Ratio Table for your problem.

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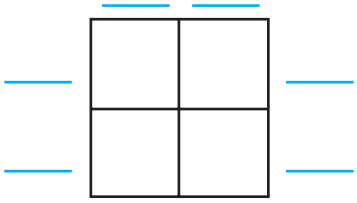
6–8 Class Activity

Name _____ Date _____

▶ Use the Basic Ratio

Solve the proportion problems below using Factor Puzzles, and then solve them using a different method.

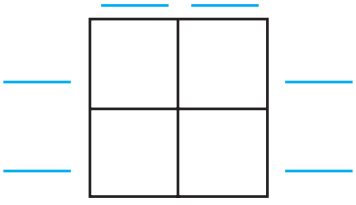


1. Danny filled each vase with 5 roses and 9 irises. How many irises would he need if he uses 30 roses?

_____

2. $2 : 7 = 10 : y$

_____



▶ Solve Problems

Tell whether each problem is a proportion problem or not. Tell why you think so, explaining the assumptions you made. Then solve the problem.

3. Martha and Beth walk home from school at different rates. When Martha walks 35 feet, Beth walks 15 feet. How far has Martha walked when Beth has walked 30 feet?

_____

_____

4. If I have 20 blue marbles and 25 red marbles, what is the ratio of blue to red marbles? How many red marbles would be in the same ratio to 8 blue marbles?

_____

_____

_____

5. Maggie bought vegetables at the farmers' market. She chose 6 tomatoes and 9 broccoli bunches. Then she chose 8 carrots. How many heads of lettuce do you think Maggie chose?

_____

_____

Name _____ Date _____

6. Every day, Mark and Wanda watch *Nature Journal* together, but Wanda has missed some of the episodes. When Mark had seen 7, Wanda had seen 4. When Mark had seen 10, how many episodes had Wanda seen?

Match three tables with the problems from 3, 4, 5, and 6 that they represent. Which table does not match any problem? Cross out any table that is not a Ratio Table. Circle the rows that make the proportions and fill in the basic ratios in the blue circles.

7.

◯	◯
0	0
1	0
2	0
3	0
4	1
5	2
6	3
7	4
8	5
9	6
10	7

8.

◯	◯
0	0
5	3
10	4
15	5
20	6
25	7
30	8
35	9
40	10
45	20
50	22

9.

◯	◯
0	0
7	3
14	6
21	9
28	12
35	15
42	18
49	21
56	24
63	27
70	30

10.

◯	◯
0	0
4	5
8	10
12	15
16	20
20	25
24	30
28	35
32	40
36	45
40	50

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6–9 Class Activity

Name _____ Date _____

▶ Write Proportion Problems

Make up a proportion problem for each proportion. Then solve the problem.

1. 24 : 36 = 14 : _____

2. _____ : 24 = 56 : 32

6–9 Class Activity

Name _____ Date _____

▶ Practice Solving Proportion Problems

Decide whether each problem is a proportion problem. Then solve the problem.

Show your work.

3. A turtle crawled 21 meters in 12 minutes. How long did it take her to crawl 14 meters if she crawled at the same rate the whole time?

_____

4. At the Party Store 3 big balloons cost $2. How much will 24 big balloons cost?

_____

5. Every month the public library purchases 10 new fiction books and 7 new DVDs. When the library has purchased 56 new DVDs, how many fiction books will it have purchased?

_____

6. John and Bill drove to Utah for their vacation. They both drove their cars at the same pace, but they left on different days. John left on Day 1 and Bill left 3 days later on Day 4. John got to Utah on Day 6. What day did Bill get to Utah?

_____

7. Mr. Munchkin owns a donut bakery downtown. His donut-making machine is pretty good. Out of every 9 donuts, only 2 are not absolutely perfect. He sells these donuts for less. One day, he baked 54 donuts. How many were not perfect?

_____

8. Two trucks left the dock at exactly the same time and traveled at steady rates. When the first truck had traveled 15 miles, the second truck had traveled 45 miles. How far will the second truck have traveled when the first truck has traveled 30 miles?

_____

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6–10 Class Activity

Name Date

Vocabulary

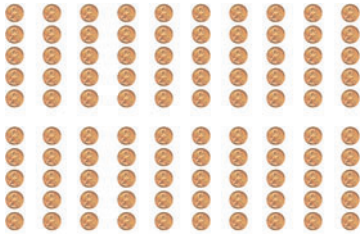
percent

▶ Introduce Percent

1. Circle each **percent** of the 100 pennies.

1%	5%	10%	14%
20%	37%	50%	62%
75%	89%	100%.	

$ 1.00 = 100 pennies

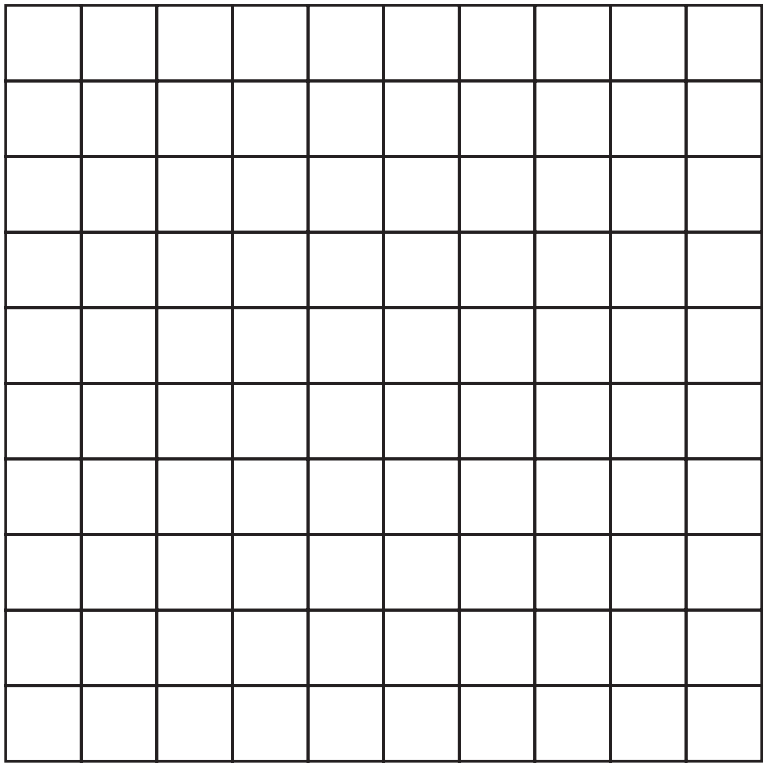


2. Use the percents in exercise 1. Mark each percent on the 100-millimeter line.

1 decimeter = 10 centimeters
= 100 millimeters

3. Use the percents in exercise 1. Label the last square centimeter that represents each percent of the 100 square centimeters.

1 square decimeter
= 100 square centimeters



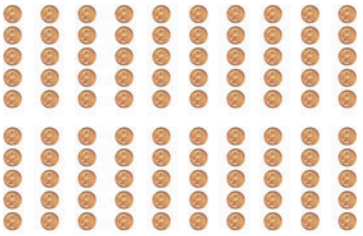
6–10 Class Activity

Name _____ Date _____

▶ Relate Percents, Fractions, and Decimals

For each exercise, show each percent of the dollar, decimeter, and square decimeter. Fill in the unknown numbers.

4. $10\% = \frac{10}{100} = \frac{\quad}{10}$
$= 0.10 = 0.1$



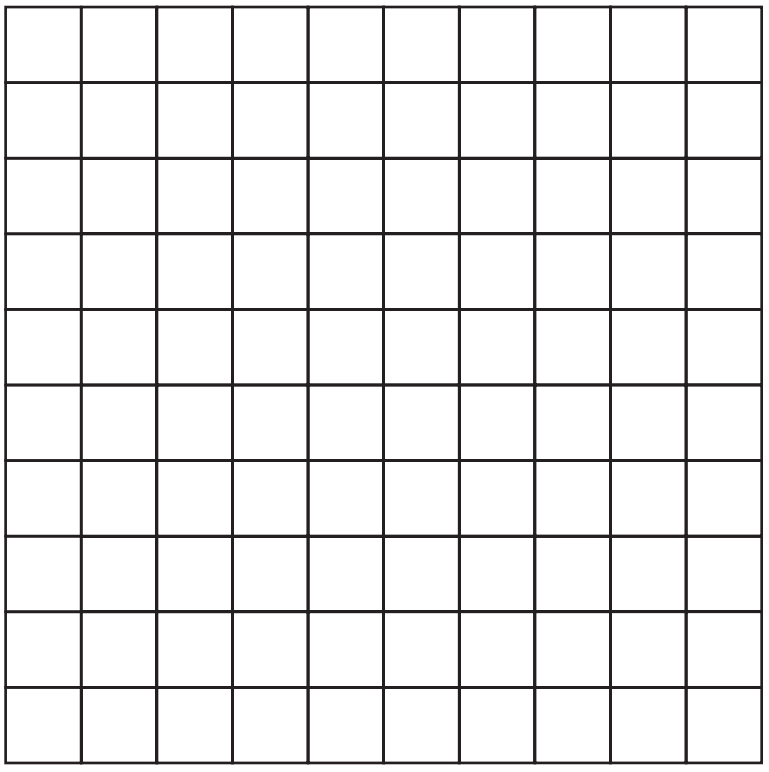
5. $20\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{5}$
$= ____ = ____$

6. $30\% = \frac{\quad}{100} = \frac{\quad}{10}$
$= ____ = ____$

7. $40\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{5}$
$= ____ = ____$

8. $50\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{2}$
$= ____ = ____$

9. $60\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{5}$
$= ____ = ____$



10. $70\% = \frac{\quad}{100} = \frac{\quad}{10}$
$= ____ = ____$

11. $80\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{5}$
$= ____ = ____$

12. $90\% = \frac{\quad}{100} = \frac{\quad}{10}$
$= ____ = ____$

13. $100\% = \frac{\quad}{100} = \frac{\quad}{10} = \frac{\quad}{5} = \frac{\quad}{1}$
$= ____$

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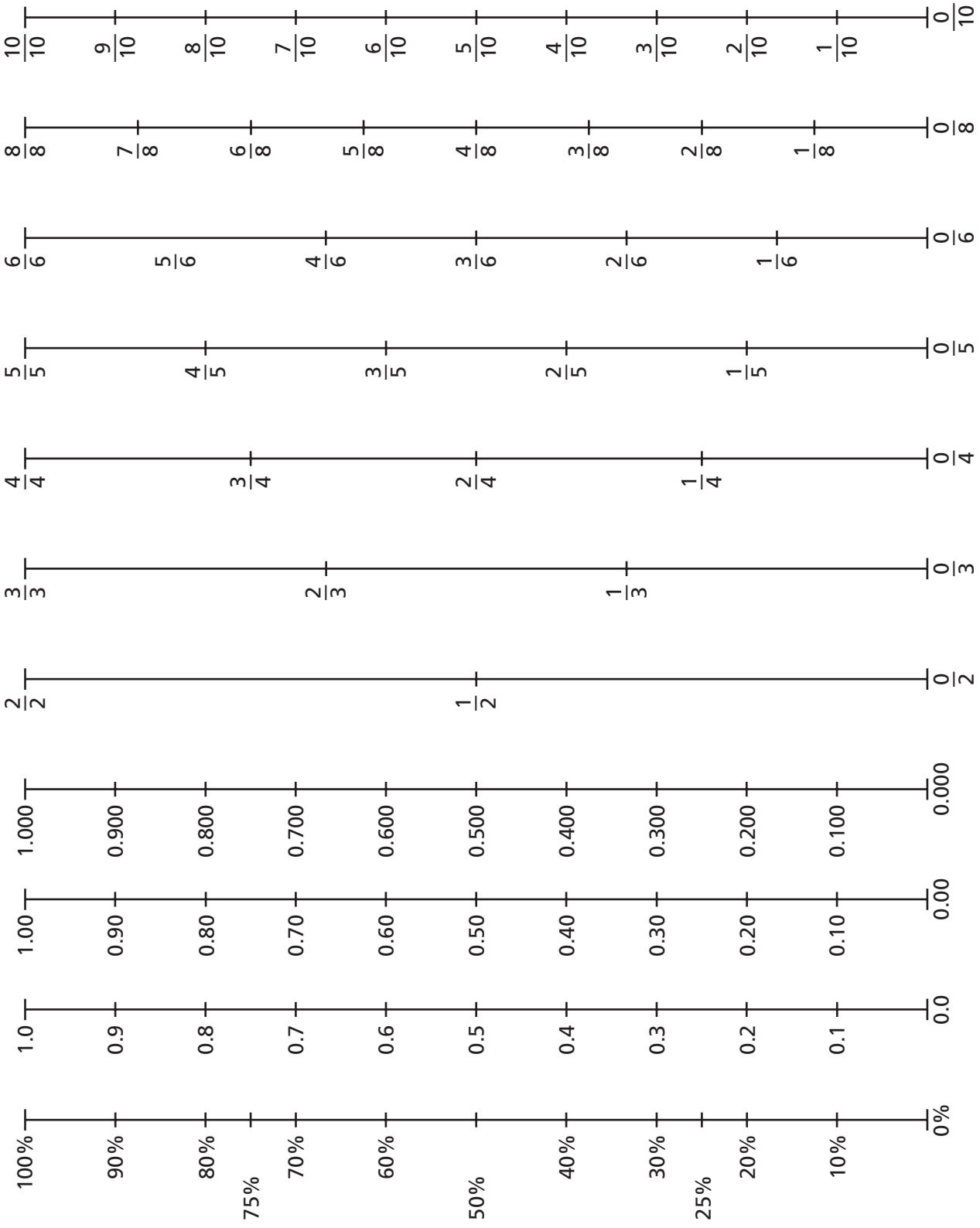
Name _____ Date _____

14. Use a ruler to draw lines across the page from each percent to connect the equivalent fractions.



6–10 Class Activity

Name _____ Date _____

▶ Practice Percent Equivalencies

15. Fill in the missing percents, decimals, and fractions.

Percent, Decimal, and Fraction Equivalencies					
Cents	Percent of a dollar	Dollars	Decimal	Fraction of 100	Simplest fraction
40 ¢	40%	$0.40	0.40	$\frac{40}{100}$	$\frac{2}{5}$
75 ¢					
	25%				
			0.50		
			0.60		
				$\frac{30}{100}$	
					$\frac{4}{5}$
		$1.00			
		$0.10			
					$\frac{9}{10}$
				$\frac{20}{100}$	
	70%				

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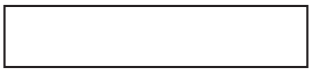
6–11 Class Activity

Name Date

▶ Solve Percent Problems With Diagrams

Solve the problems. Use what you know about fractions and percents.

This is 20% of a figure.



1. Draw 80% of the figure.

2. Draw 100% of the figure.

3. Draw 120% of the figure.

4. Draw 200% of the figure.

This is 25% of a figure.

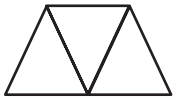
5. Draw 100% of the figure.

6. Draw 150% of the figure.

6–11 Class Activity

Name Date

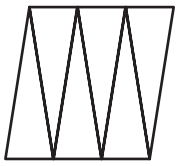
This is 75% of a figure.



7. Draw 100% of the figure.

8. Draw 25% of the figure.

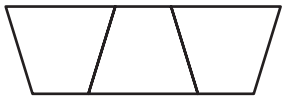
Here is 75% of a design.



9. Draw 100% of the design.

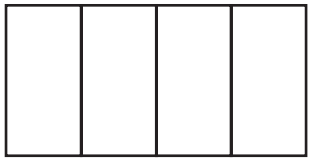
10. Draw 150% of the design.

11. This is 150% of a figure.



Draw 100% of the figure.

This is 200% of a square.



12. Draw the square.

13. Draw 150% of the square.

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6–11 Class Activity

Name _____ Date _____

▶ Solve Numeric Percent Problems

14. What is 25% of 32?

	Percent		Number
Part / Whole	$\frac{25}{100}$	=	$\frac{\square}{32}$

Why do we write $\frac{25}{100}$?

_____

Why is 32 in the denominator?

_____

Solve by simplifying: $\frac{25}{100} = \frac{\square}{\square} = \frac{\square}{32}$

15. 27 is 30% of what?

	Percent		Number
Part / Whole	$\frac{30}{100}$	=	$\frac{27}{\square}$

Why do we write $\frac{30}{100}$?

_____

Why is 27 in the numerator?

_____

Solve by simplifying: $\frac{30}{100} = \frac{\square}{\square} = \frac{27}{\square}$

16. 21 is what percent of 28?

	Percent		Number
Part / Whole	$\frac{\square}{100}$	=	$\frac{21}{28}$

Why is the unknown number above 100?

_____

Why is 21 above 28?

_____

Solve by simplifying: $\frac{21}{28} = \frac{\square}{\square} =$

17. What is 125% of 28?

	Percent		Number
Part / Whole	$\frac{125}{100}$	=	$\frac{\square}{28}$

Why is the part greater than the whole?

_____

_____

Why is 28 in the denominator?

_____

Will the unknown number be greater than or less than 28? Why?

_____

_____

Solve by simplifying: $\frac{125}{100} = \frac{\square}{\square} = \frac{\square}{28}$

Set up a proportion and solve by simplifying and finding an equivalent fraction.

18. 75% of 24 is _____.

19. 28 is 80% of _____.

20. 9 is _____ % of 36.

21. 140% of 30 is _____.

Name _____ Date _____

▶ Solve Word Problems

Solve the word problems using any method.

22. In Mr. Roberts's class there are 30 children. 18 of them are girls. What percent of the children in Mr. Roberts's class are girls?

_____

23. Andrew counted 20 fish in the pond at City Park. 15 were goldfish and the rest were carp. What percent of the fish were goldfish?

_____

24. A jug holds 80 mL of water when it is full. How much water will there be in the jug when it is 75% full?

_____

25. After a long diet, the dog Lucky weighed 54 pounds. That was 90% of his old weight. How much did Lucky weigh before the diet?

_____

26. Emma saw the movie *The Mummy* 4 times. That is only 80% of the number of times Yoko has seen it. How many times has Yoko seen *The Mummy*?

_____

27. Kevin made 55 sandwiches for the party. 33 of the sandwiches were tuna. What percent of the sandwiches were tuna?

_____

28. Chip has already eaten 320 of the 400 acorns he collected for winter. What percent of his acorns has Chip eaten?

_____

29. In Mr. Smith's front yard there is an olive tree and a palm tree. The olive tree is 12 feet tall and the palm tree is 15 feet tall. The olive tree's height is what percent of the palm tree's height?

_____

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6–12 Class Activity

Name Date

▶ Solve Probability Problems

Show your work.

Solve each problem using any method.

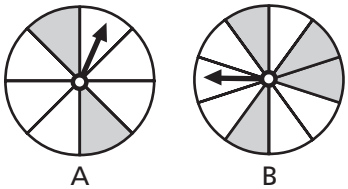
1. A box of 40 crayons has 10 shades of red, 6 shades of blue, 4 shades of yellow, 2 shades of purple, as well as other colors. What is the probability of getting a red crayon? A blue crayon? A yellow crayon? A purple crayon? Express your answers as a percent.

2. The grab bag at the town picnic contained 2,000 tickets to local baseball games. 40% were Pigeon tickets, 35% were Robin tickets, and 25% were Sparrow tickets. If you drew out 20 tickets, how many tickets for each team would you expect to get? How many Pigeon tickets are there?

3. Peppy the cat sleeps 18 hours a day. What is the percent chance that you will find Peppy asleep at any one time of day?

4. A bushel of apples contains 32 Jonathan apples, 28 Golden Delicious apples, and 20 Granny Smith apples. What are your chances of picking one Jonathan apple from the bushel? Express your answer as a percent.

5. What are your chances of each spinner landing on a dark space? Express your answers as a percent.



Name _____ Date _____

6. Of the 5,000 children who live in Garden Town, 4,500 love to eat vegetables.

   What percent of the children love to eat vegetables?

   _____

7. Of the 30 children who live on Green Bean Street in Garden Town, how many probably do not like to eat vegetables?

   _____

8. A box of 30 chocolates has 12 chocolate-covered caramels, 6 chocolate-covered cherries, 3 chocolates with nougat centers, and 9 solid chocolates. What is the probability of picking a chocolate-covered caramel? A chocolate-covered cherry? A chocolate with a nougat center? Solid chocolate? Express your answers as percents.

   _____

   _____

   _____

9. Dorothy bought a bag of 500 mixed flower seeds. The bag contained 250 dahlia seeds, 120 daisy seeds, 75 violet seeds, and the rest were forget-me-nots. Dorothy planted 200 of the seeds in her garden. How many of each flower can she expect to grow in her garden?

   _____

   _____

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