

Ratios

Name: _____

Prerequisite: Relating Patterns

Study the example showing how to describe the relationship between two patterns. Then solve problems 1–6.

Example

The school store sells headbands for \$2 each and T-shirts for \$8 each. Write ordered pairs to compare the cost of headbands to T-shirts for 0, 1, 2, 3, 4, and 5 of each item.

Use a table to show the two numerical patterns.

Cost of Headbands (\$)	Cost of T-shirts (\$)	Ordered Pairs
0	0	(0, 0)
2	8	(2, 8)
4	16	(4, 16)
6	24	(6, 24)
8	32	(8, 32)
10	40	(10, 40)

The cost of headbands follows the rule “add 2.”

0, 2, 4, 6, 8, 10

The cost of T-shirts follows the rule “add 8.”

0, 8, 16, 24, 32, 40

Then write the corresponding terms as ordered pairs.

- 1** Use the rule “add 8” to find the cost of 6 T-shirts. Explain how you found your answer.

- 2** For each ordered pair in the table, how does the second number compare to the first number?

- 3** If the cost of headbands is \$20, what is the corresponding cost for T-shirts? _____

Vocabulary

corresponding terms numbers that are in the same place in two or more related patterns.

ordered pair a pair of numbers that locate a point on a coordinate plane.

Solve.

- 4 One pattern starts at 0 and follows the rule “add 2.” Another pattern starts at 0 and follows the rule “add 5.” Write the first 6 numbers in each pattern. How do the terms in the first pattern compare to the corresponding terms in the second pattern?

Show your work.

Solution: _____

- 5 Complete the table below. Then describe the relationship between corresponding terms.

x	y	Ordered pairs (x, y)
0	0	
6	3	
12	6	

- 6 A shop sells matching hats and scarves. The scarves cost 1.5 times as much as the hats. Write two patterns that could represent the costs of 1, 2, 3, 4, and 5 hats and scarves. List the first 5 terms of each pattern. Then explain how to find the cost of 6 hats and scarves, using the patterns you wrote.

Show your work.

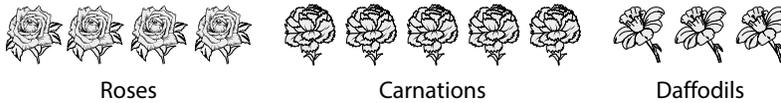
Solution: _____

Compare Quantities Using Ratios

Study the example problem showing how to compare quantities using ratios. Then solve problems 1–8.

Example

A florist makes a bouquet using 4 roses, 5 carnations, and 3 daffodils. What is the ratio of roses to the total number of flowers in the bouquet?



There are 4 roses in the bouquet.

The total number of flowers is $4 + 5 + 3 = 12$.

There are 12 flowers in the bouquet.

You can express the ratio "4 roses to 12 total flowers" as $\frac{4}{12}$, $4 : 12$, or 4 to 12.

- 1 Write the ratio of carnations to daffodils in three different ways.

- 2 What is the ratio of the total number of flowers to carnations? Write the ratio in three different ways.

- 3 Describe a ratio in words about the flowers that compares one part of the bouquet to another part. Write the ratio in at least two different ways.



Solve.

Ben has a collection of 15 coins in quarters and dimes. There are 7 quarters in the collection.

- 4 Write the ratio of quarters to dimes in at least two different ways.

- 5 Write the ratio of dimes to total number of coins in at least two different ways.

- 6 Describe a ratio in words about the coins that compares the whole coin collection to one part of it. Then write the ratio in at least two different ways.

- 7 Is the ratio of quarters to dimes the same as the ratio of dimes to quarters? Explain.

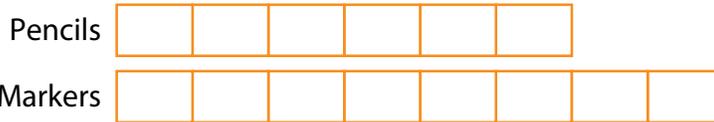
- 8 Pradip and Pam each have a plate of apple slices and orange slices. The ratio of apple slices to the total number of slices on Pradip's plate is 4 to 11. The ratio of the total number of slices to orange slices on Pam's plate is 13 : 6. Neither person has more than 20 total slices. Who has more orange slices? Explain.



Ratios

Solve the problems.

- 1 Alicia has pencils and markers as shown in the tape diagram. Write the ratio of markers to pencils in three different ways.



Be sure the terms in each ratio are in the correct order.



- 2 Kenny has 2 red marbles, 3 blue marbles, and 4 black marbles. Which ratio compares a part to the whole?

- A 2 to 7 C 5 to 4
B 3 : 9 D 9 : 5

The whole in this problem is the total of the red, blue, and black marbles.



- 3 Mrs. Adams buys 4 bananas and 6 apples. Tell whether each statement is *True* or *False*.

- a. The ratio of bananas to apples is 6 : 4. True False
- b. The ratio of apples to total fruit is 10 to 6. True False
- c. The ratio of bananas to total fruit is 4 to 10. True False
- d. The ratio of total fruit to apples is $\frac{6}{10}$. True False

Does the ratio compare part to part or part to whole?



Solve.

4 For his exercise last weekend, Benito walked 5 miles and jogged 2 miles. What is the ratio of the miles walked to the total number of miles of exercise?

- A** 5 to 2
- B** 2 : 7
- C** 5 : 7
- D** 7 to 5

Elsa chose **A** as the correct answer. How did she get that answer?

Are you finding a ratio that compares part to part or part to whole?



5 The ratio of boys to girls in Mr. Smith's class is 3 : 2. Which statement is correct? Circle all that apply.

- A** For every 3 boys, there are 2 girls.
- B** For every 2 boys, there are 3 girls.
- C** There are exactly 5 students in Mr. Smith's class.
- D** The ratio of the number of boys in the class to the total number of students is 3 : 5.
- E** The ratio of the number of students in the class to the number of girls is 5 to 2.

Does the statement describing the ratio match the numerical ratio given in the problem?



6 Kelly buys a hat and gloves. The price of the hat is 4 times as much as the gloves. The hat costs \$8. What is the ratio of the cost of the gloves to the total cost for both items?

Show your work.

How can you find the cost of the gloves?



Solution: _____