

UNIT
2

Ratios and Proportional Relationships

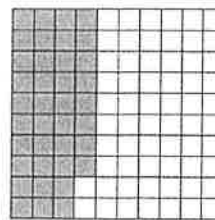
Unit Test: C

- A shopper bought a 12-pound bag of oranges for \$18.75. What is the unit price per ounce?
 A \$0.098 C \$1.56
 B \$0.64 D \$9.76
- Why does this table **not** show a proportional relationship?

Time in Weeks (x)	2	4	6	8
Savings in Dollars (y)	60	120	240	480

- The ratio $x : y$ equals $1 : 30$.
 - The ratio $x : y$ is not constant.
 - The savings does not stay constant.
 - The savings is not increasing fast enough.
- When you graph a proportional relationship $y = kx$, what does the constant of proportionality equal?
 A x-intercept C slope
 B y-intercept D none of these
 - Aki bought $3\frac{3}{4}$ pounds of spinach for \$6.88. Using the unit rate, how much would $1\frac{1}{2}$ pounds of spinach cost?
 A \$1.83 C \$3.06
 B \$2.75 D \$8.71
 - The population of a town doubled in 5 years, then doubled again in the next 10 years. What is the percent of increase?
 A 100% C 300%
 B 200% D 400%

- The price of an item has increased 15% since last year. However, a person can buy the item for a 25% employee discount. The employee pays \$172.50. What was the price last year?
 A \$200 C \$600
 B \$270.59 D \$811.79
- \$5,000 was invested at a simple interest rate. In 15 years, the account was worth 65 hundred dollars. What was the interest rate?
 A 0.2% C 2%
 B 1.5% D 2.15%
- A quarter and dime make up what percent of a dollar?
 A 25% C 70%
 B 35% D 350%
- When you find 215% of a number, how does your answer relate to the original number?
 A There is no relationship.
 B It is 215% less than the original number.
 C It is more than double the original number.
 D It is equal to the original number minus 215.
- The relation of 38 squares to 100 squares can be expressed in many ways. Which of the following is **not** a way to express the relationship?



- $\frac{19}{50}$
- 38%
- 0.19
- 0.38

UNIT
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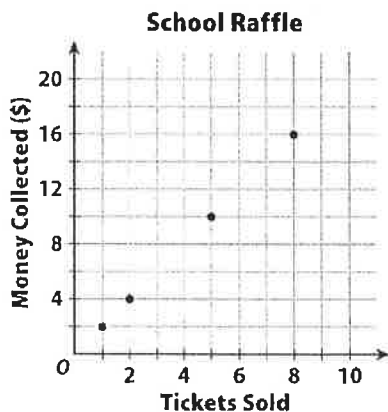
Ratios and Proportional Relationships

11. A machine stamps 50 metal parts in 15 minutes 30 seconds. Find the unit rate in parts per hour.
- _____

12. The table shows the distance traveled by two objects moving at constant speeds. Find their constants of proportionality. Which object is moving faster?

Time (s)	10	15	20
Object 1 (m)	85	127.5	170
Object 2 (m)	125	187.5	250

13. The graph shows last year's raffle. This year the school increased prices by 50 cents per ticket. What equation represents this year's relationship?



14. In 1950, the population of a city was about 800,000 people. Over the next 50 years, the population increased to 1.3 million. Find the percent of increase.
- _____

15. A business bought a lot of 2,500 lamps for fifty thousand dollars and wants to sell them at a 15% profit. How much should each lamp cost?
- _____

16. A store bought a sofa wholesale for \$200 and marked it up 15%. When the sofa didn't sell, they reduced the price 15%. Show why the current price is **not** \$200.
- _____

17. Karen is riding her bike at 4 miles per hour. She wants to show this on a graph. What should she draw?
- _____

18. What is the constant rate of change shown in the table?

Number of Batteries	Cost (\$)
1	1.19
2	2.38
3	3.57
8	9.52

19. How would you show a rate of change of 3.5 meters per minute on a graph? Name some of the points.
- _____
- _____

20. A flagpole is 20 feet tall. Its shadow is 13 feet long. A boy is standing next to the flagpole. He is 5 feet 6 inches tall. How long is his shadow?
- _____

MODULE
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Rates and Proportionality

9. Complete the table for an object that goes $\frac{3}{4}$ miles in 6 minutes.

Distance (mi)	$\frac{3}{4}$	$1\frac{1}{2}$	$2\frac{1}{4}$
Time (h)	$\frac{1}{10}$		

10. If a person bikes 2.4 miles in 10 minutes, how far can he bike in 1.5 hours?
- _____

11. Explain how to simplify this complex fraction. Interpret the meaning of the result.

$$\frac{330 \text{ pages}}{\frac{3}{4} \text{ hour}}$$

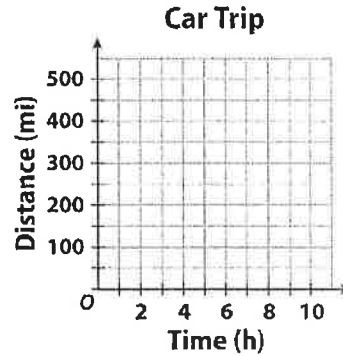
12. Find k , the constant of proportionality, for the data in this table. Then write an equation for the relationship.

x	25	50	75	100
y	160	320	480	640

13. Create a table that shows a proportional relationship. Do not use an integer for the constant of proportionality.

Number of Cookies	6	12	20
Cost (\$)			

14. A car traveled at a constant speed of 45 miles per hour. Make a graph to show how the distance traveled in miles is related to the time in hours.



Use the graph for 15–16.



15. What equation shows the line through the data points on the graph?
- _____

16. Write an equation for someone saving more money per week. Add a line to the graph for this equation.
- _____

17. An object travels $\frac{4}{5}$ miles in one-half hour. What is its speed?
- _____

MODULE
5


Proportions and Percent

Module Quiz: B

Use the table for 1–2.

Sales Tax in Cities	
River City	3%
Springfield	4.1%
Thompsonville	2.9%
Union City	3.2%

- Liz wants to buy a shirt for \$25. How much will Liz's shirt cost in Springfield rounded up to the nearest cent?
 - \$25.50
 - \$26.00
 - \$26.03
 - \$36.66
- How much more will her shirt cost in Union City than in River City?
 - \$0.01
 - \$0.05
 - \$0.10
 - \$25.80
- A town's population went from 25,800 to 42,600 in 15 years. What was the percent of change?
 - 35%
 - 39.4%
 - 61%
 - 65.1%
- A gym's membership in 2010 was 8,700. Now, it is 6,400. Which expression equals the percent of change?
 - $6,400 \div 8,700$
 - $8,700 - 6,400$
 - $(8,700 - 6,400) \div 8,700$
 - $(8,700 - 6,400) \div 6,400$

- A store marks up sporting goods 27%. Which expression equals the retail price of an item with an original cost of p dollars?
 - $p \times 0.27$
 - $p \div 0.27$
 - $p \times 0.73$
 - $p \times 1.27$
- A toy store marks down every toy by 15% in January. How much does a toy cost during January? Use p for the price in December.
 - $0.15p$
 - $0.75p$
 - $0.85p$
 - $1.15p$
- A market buys mixed nuts at \$12.50 per pound. They want to make a 22% profit. What should they charge for the retail price?
 - \$2.75/lb
 - \$9.75/lb
 - \$15.25/lb
 - \$34.50/lb
- A student spends \$48 on school supplies at a store where the sales tax is 7%. What is the total cost of the supplies?
 - \$3.36
 - \$33.60
 - \$51.36
 - \$55.00
- What is the annual interest for a principal of \$3,500 at a simple annual interest rate of 2.3%?
 - \$80.50
 - \$805.00
 - \$3,580.50
 - \$4,305.00
- Which expression does this number line show?
 
 - $-0.5 - 1.5$
 - $1.5 - (-0.5)$
 - $1.5 - 2$
 - $1.5 + 2$

MODULE
5

Proportions and Percent

11. What is one way to find the total cost of a jacket for \$55.80 with a sales tax of 2.7%?

12. What is another way to find the total cost of a jacket for \$55.80 with a sales tax of 2.7%?

13. The price of a \$250 coat increased 7% last year. The coat is now on sale for one-half off. What is the sale price?

Use the table for 14–15.

Population Changes

Town	2000	2010
Lakeside	51,342	45,863
Centerville	37,065	26,102
Riverview	41,726	63,017

14. Find the percent of change to the nearest tenth of a percent for Centerville.

15. Which town had the greatest percent of change? What was the percent?

16. A clerk is marking up merchandise 34%. The original price of an item is \$455. What will be the retail price?

17. At the end of the summer, a store marks down all the outdoor furniture 18%. A family bought 4 chairs in June at \$35 each, then 2 more chairs when they went on sale. How much did all 6 chairs cost?

18. A shopper paid \$51.93 including tax for an item marked \$48.99. What would she pay for another item marked \$75?

19. An amount of \$8,000 is invested at a simple interest rate of 1.5%. What is the total amount after 3 years?

20. A restaurant bill before tax is \$15.50. If the sales tax is 8% and a 15% tip is added, what is the total cost of the meal?

21. Find k , the constant of proportionality, for the data in this table. Then write an equation for the relationship.

x	10	15	20	25
y	65	97.5	130	162.5
