First 5 Minutes — Review Question

GRADE 6 • TOPIC 5 • LESSON 5.7 | 5 points • Work independently

Lesson 5.7 • Solve Unit Rate Problems

Find 156 miles in 3 hours as a unit rate.

1. Show each step in your notebook.
2. Explain the operation or rule you used.

Real-Life Connection & Key Concepts

Essential question

How can you use unit rates to solve problems?

Solve & Discuss It!

A train travels at a constant speed of 55 mph. How long will it take to travel 275 miles? How about 385 miles?

What we will learn

Use constant speed, unit price, and equations to find missing distance, time, cost, or quantity.

Definitions & rules

Distance = rate × time.

Total cost = unit price × quantity.

Rearrange: time = distance ÷ rate; quantity = cost ÷ unit price.

Example 1 — Solve Unit Rate Problems

GRADE 6 • TOPIC 5 • LESSON 5.7 | Guided example • Model and explain

Problem

A jet flies 175 miles in 7 minutes at constant speed. How far can it fly in 85 minutes?

Worked solution

175 ÷ 7 = 25 miles/min.

25 × 85 = 2,125 miles.

Time (min)	1	7	25	50	85
Distance (mi)	25	175	625	1250	2125

Find the unit rate first. Use distance = rate × time or total = rate × quantity.

Example 2 — Solve Unit Rate Problems

GRADE 6 • TOPIC 5 • LESSON 5.7 | Guided example • Model and explain

Problem

Grocery Giant sells 24 slices of Swiss cheese for $7.20. How much do 5 slices cost at the same rate?

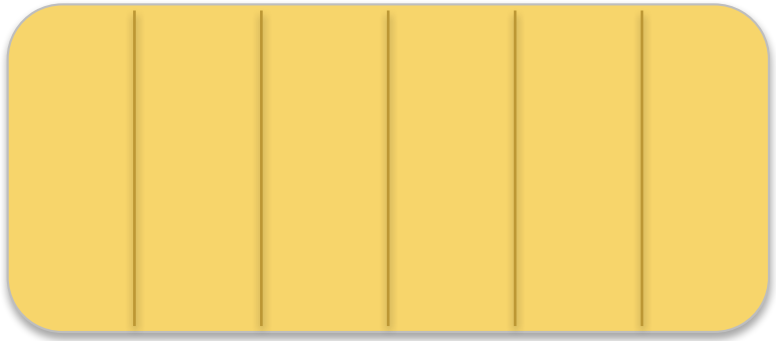
Worked solution

7.20 ÷ 24 = $0.30 per slice.

5 × $0.30 = $1.50.

Find the unit rate first. Use distance = rate × time or total = rate × quantity.

24 cheese slices



$7.20

Example 3 — Solve Unit Rate Problems

GRADE 6 • TOPIC 5 • LESSON 5.7 | Guided example • Model and explain

Problem

A ferryboat travels 57.5 miles in 2.5 hours. How long will it take to travel 92 miles at that speed?

Worked solution

r = 57.5 ÷ 2.5 = 23 mi/h.

Use d = rt: 92 = 23t.

t = 92 ÷ 23 = 4 hours.

Time (h)	1	2.5	4
Distance (mi)	23	57.5	92

Find the unit rate first. Use distance = rate × time or total = rate × quantity.

Individual Work

GRADE 6 • TOPIC 5 • LESSON 5.7 | 10 minutes total • 10 points

Complete all five tasks. Show your reasoning.

7. (p. 309) Travel 1.25 miles in 2 minutes. At that rate, how long for 1.5 miles?

8. (p. 309) At 24 mph, how long will a trip of 156 miles take?

9. (p. 309) 8 minutes cost $1.20. Find the cost of 17 minutes.

Individual Work — continued

GRADE 6 • TOPIC 5 • LESSON 5.7 | 10 minutes total • 10 points

Finish the remaining problems. Check your work.

10. (p. 309) A trip covers 2,045 miles in 5 days. Find the daily rate and describe how to calculate the time for 3,272 miles.

11. (p. 309) At that daily rate, how many days will the 3,272-mile trip take?

Individual Work — Answer Key

GRADE 6 • TOPIC 5 • LESSON 5.7 | Check your answers

Find the unit rate first. Use distance = rate × time or total = rate × quantity.

7. (p. 309)

1.25 ÷ 2 = 0.625 mi/min; 1.5 ÷ 0.625 = 2.4 min.

8. (p. 309)

156 miles ÷ 24 mph = 6.5 hours.

9. (p. 309)

$1.20 ÷ 8 = $0.15/min; 17 × $0.15 = $2.55.

10. (p. 309)

Rate = 2,045 miles ÷ 5 days = 409 mi/day. Divide entire distance by this rate.

11. (p. 309)

3,272 mi ÷ 409 mi/day = 8 days for the entire trip.

Group Work

GRADE 6 • TOPIC 5 • LESSON 5.7 | 8 minutes total • 10 points

Work together. Each person must contribute a solution.

12. (p. 310) A plane travels at 470 mph. Write and solve an equation for the time to travel 3,008 miles.

13. (p. 310) 7 panes cost $15.05. At the same unit price, what do 2 more panes cost?

Group Work — continued

GRADE 6 • TOPIC 5 • LESSON 5.7 | 8 minutes total • 10 points

Agree on a solution and be ready to explain it.

14. (p. 310) Use C ≈ 3.14d. Find circumferences for diameters 1, 2, 3 and 4 m.

15. (p. 310) 70 feet cost $18.20. Find the cost for 30 feet.

Group Work — Answer Key

Find the unit rate first. Use distance = rate × time or total = rate × quantity.

12. (p. 310)

$470h = 3{,}008 \rightarrow h = \frac{3{,}008}{470} = 6.4$ hours.

13. (p. 310)

$15.05 ÷ 7 = $2.15/pane; 2 more cost $4.30.

14. (p. 310)

$C \approx 3.14d$. For diameters 1, 2, 3, 4: circumferences 3.14, 6.28, 9.42, 12.56 m.

15. (p. 310)

$18.20 ÷ 70 = $0.26/ft. 30 × $0.26 = $7.80.

Exit Ticket

GRADE 6 • TOPIC 5 • LESSON 5.7 | 2 minutes • Independent check

Before you leave, solve this problem.

A 2.5-lb bag costs $6.25. How many pounds can you buy for $18?

Show your work.

Write the answer with the correct units or graph, if needed.