

Rate Detective

Find the constant rate in every form.

GRADE 7 • TEKS 7.4

7.4 "Proportionality. The student applies mathematical process standards to represent and solve problems involving proportional relationships..."

NAME _____

DATE _____

FIND THE UNIT RATE

In a proportional relationship, the ratio y/x stays the same. Divide the output by the input to find the constant of proportionality, k , then use k to find missing values.

WORKED EXAMPLE

Eight concert tickets cost \$48. At the same price per ticket, how much do six tickets cost?

1. $\$48 / 8 = \6 per ticket.
2. $6 \text{ tickets} \times \$6 \text{ per ticket} = \$36$.

Answer: \$36

PRACTICE 6 problems

- 1** A cyclist rides 28 miles in 4 hours at a constant rate. What is the unit rate?

ANSWER _____

- 2** In the equation $y = 12x$, what is the constant of proportionality, k ?

ANSWER _____

- 3** A table shows $x = 2, y = 15$ and $x = 10, y = 75$. What is $k = y/x$?

ANSWER _____

- 4** A graph of y versus x passes through the points $(5, 20)$ and $(11, 44)$. What is the constant of proportionality?

ANSWER _____

- 5** A runner travels at 13 miles per hour for 5 hours. Use $d = rt$ to find the distance traveled.

ANSWER _____

- 6** A game headset costs \$72 and is on sale for 25% off. What is the sale price?

ANSWER _____

APPLY IT Show your work

- 1** A video uploads 420 MB in 7 minutes at a constant rate. How many MB will upload in 12 minutes?
How many minutes will it take to upload 900 MB?

WORK SPACE

ANSWER _____

- 2** A hoodie costs \$96. Its price increases by 25%, then the store gives a 20% discount on the increased price. What is the final price?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A club earns \$84 after selling 12 snacks and \$140 after selling 20 snacks. Is the amount earned proportional to the number of snacks sold? Explain using unit rates, then predict the amount earned after selling 35 snacks.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A cyclist rides 28 miles in 4 hours at a constant rate. What is the unit rate?	7 miles per hour
2	In the equation $y = 12x$, what is the constant of proportionality, k ?	12
3	A table shows $x = 2$, $y = 15$ and $x = 10$, $y = 75$. What is $k = y/x$?	15/2
4	A graph of y versus x passes through the points (5, 20) and (11, 44). What is the constant of proportionality?	4
5	A runner travels at 13 miles per hour for 5 hours. Use $d = rt$ to find the distance traveled.	65 miles
6	A game headset costs \$72 and is on sale for 25% off. What is the sale price?	\$54

PART 2 • APPLY IT

- 720 MB; 15 minutes** Divide 420 by 7 to find a rate of 60 MB per minute. Multiply 60 by 12, then divide 900 by 60.
- \$96** Increase \$96 by 25% to get \$120. A 20% discount on \$120 is \$24, so the final price is \$96.

CHALLENGE

Yes. $\$84 / 12 = \7 per snack and $\$140 / 20 = \7 per snack, so the unit rates match. For 35 snacks, $35 \times \$7 = \245 .

Accept equivalent unit-rate forms, including 7.5 for 15/2. For the challenge, accept any clear explanation that shows both unit rates are \$7 per snack and gives \$245.