

Spot the Constant

Find the number that connects x and y .

GRADE 7 • MA.7.AR.4.2

MA.7.AR.4.2 "Determine the constant of proportionality within a mathematical or real-world context given a table, graph or written description of a proportional relationship."

NAME _____

DATE _____

FIND K

In a proportional relationship, $y = kx$, where k is the constant of proportionality. Find k by dividing y by x , and use the units to tell what k means.

WORKED EXAMPLE

A proportional relationship has $x = 11$ and $y = 44$. Find k .

1. Write the ratio: $k = y/x$.
2. Substitute: $k = 44/11$.
3. Simplify: $k = 4$.

Answer: $k = 4$

PRACTICE 6 problems

- 1** The table shows a proportional relationship.
 x : 2, 5, 8. y : 14, 35, 56. Find k .

ANSWER _____

- 2** A proportional relationship is shown by $y = (3/5)x$. Find k .

ANSWER _____

- 3** A graph of a proportional relationship includes the point (9, 54). Find k .

ANSWER _____

- 4** The table shows x : 12, 20 and y : 18, 30. Find k .

ANSWER _____

- 5** For a proportional relationship, y increases by 8 units for each increase of 1 unit in x . Find k .

ANSWER _____

- 6** A graph passes through the origin and the point (15, 25). Find k .

ANSWER _____

APPLY IT Show your work

- 1** A phone game gives a player 15 coins for completing 6 quests. The number of coins y is proportional to the number of quests x . Find k and tell what it means.

WORK SPACE

ANSWER _____

- 2** A student buys 6 digital art packs for \$18. The total cost y is proportional to the number of packs x . Find k and tell what it means.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A proportional relationship has this table. x : $\frac{1}{3}$, $\frac{2}{3}$, $\frac{5}{3}$. y : 3, 6, 15. Determine k . Explain how the table shows that the same k works for every pair.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	The table shows a proportional relationship. x: 2, 5, 8. y: 14, 35, 56. Find k.	k = 7
2	A proportional relationship is shown by $y = (3/5)x$. Find k.	k = 3/5
3	A graph of a proportional relationship includes the point (9, 54). Find k.	k = 6
4	The table shows x: 12, 20 and y: 18, 30. Find k.	k = 3/2
5	For a proportional relationship, y increases by 8 units for each increase of 1 unit in x. Find k.	k = 8
6	A graph passes through the origin and the point (15, 25). Find k.	k = 5/3

PART 2 • APPLY IT

- k = 5/2, meaning 2 1/2 coins per quest** Divide coins by quests: $15/6 = 5/2$. The constant is the number of coins earned for each quest.
- k = 3, meaning \$3 per art pack** Divide total cost by number of packs: $18/6 = 3$. The constant is the cost of one art pack.

CHALLENGE

k = 9. Each y/x ratio equals 9, such as $3/(1/3) = 9$, so $y = 9x$ for every pair.

Accept equivalent fractional forms and correct decimal forms when they are exact. For word problems, accept the constant with correct units and a matching interpretation.