



**SAINT PIERRE**  
**LEARNING RESOURCES**

**GRADE 7 | MATHEMATICS**

# Grade 7 Ratios and Proportional Relationships

**FREE SAMPLE | 9 PAGES**

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## **STANDARD / LEARNING FOCUS**

Selected components of CCSS 7.RP.A.1, 7.RP.A.2(a-d), and 7.RP.A.3: unit rates, proportional relationships, and multistep ratio/percent problems. See the state appendix for local variations.

## **WHAT'S INCLUDED**

- One worked example and five practice tasks
- Matching sample answer key and license
- Student response space and classroom-use guidance

This is a selected sample. Matching sample answers are included in this PDF. Original page references are retained. Selected-skill practice; this packet does not establish complete standard mastery.

Official reference: Common Core State Standards Initiative - Grade 7 RP

## Learn, then try

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Show reasoning and label units. Keep exact values until the final rounding step.

### W01

A painter uses  $\frac{3}{4}$  liter of paint for  $\frac{2}{5}$  of a wall. At this constant rate, how many liters are needed per wall?

#### Worked reasoning

The quantity requested is liters per wall, so divide liters by walls:  $(\frac{3}{4}) \div (\frac{2}{5}) = (\frac{3}{4}) \times (\frac{5}{2}) = \frac{15}{8} = 1 \frac{7}{8}$  liters per wall. Check:  $(\frac{15}{8}) \times (\frac{2}{5}) = \frac{3}{4}$  liter. The reverse quotient,  $\frac{8}{15}$ , would have units walls per liter.

### R01

A dispenser pours  $\frac{5}{6}$  liter in  $\frac{1}{3}$  minute at a constant rate. Find liters per minute and liters poured in 2 minutes.

Show your reasoning and include units.

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# Tables graphs and equations

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## P02

Table B pairs  $x = 0, 1, 2, 3$  hours with  $y = 0, 3, 7, 12$  kilometers. A student says it is proportional because it includes  $(0,0)$ . Evaluate the claim.

Show your reasoning and include units.

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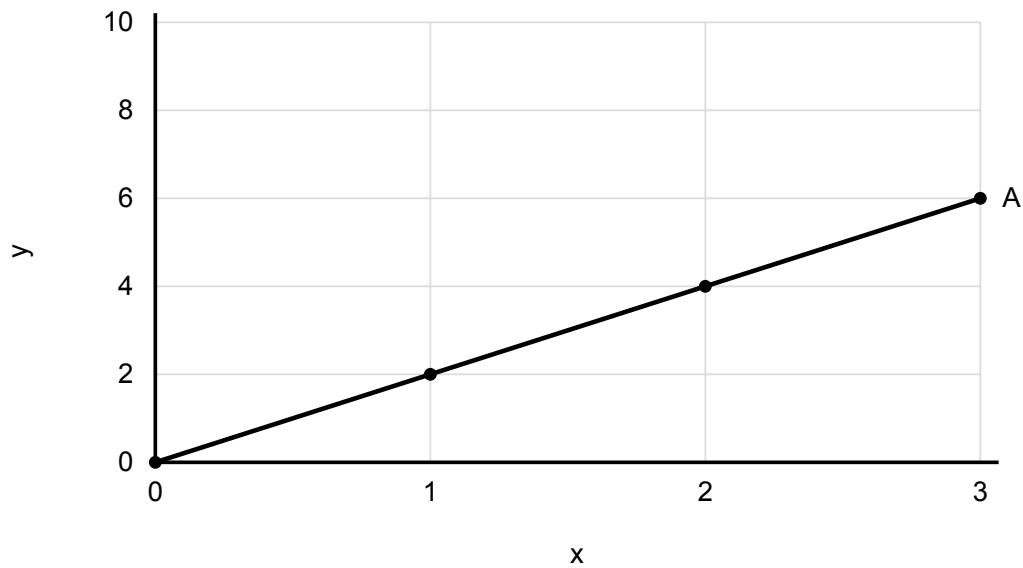
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Use a table, diagram, or calculation to support your explanation.

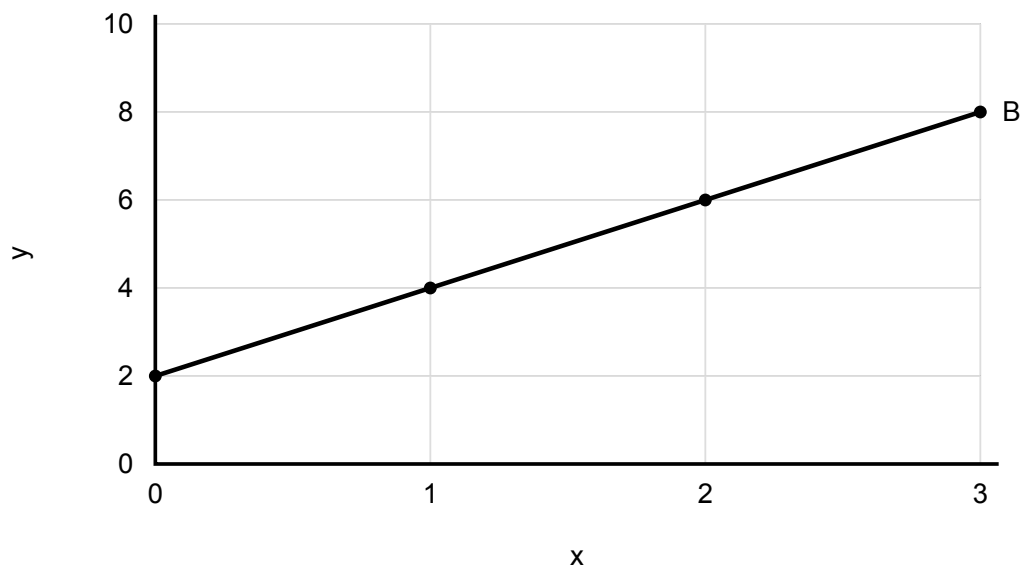
## P03 | Read the graphs

Graph A is a straight line through  $(0,0)$ ,  $(1,2)$ ,  $(2,4)$ ,  $(3,6)$ . Graph B is a straight line through  $(0,2)$ ,  $(1,4)$ ,  $(2,6)$ ,  $(3,8)$ . Graph C is a smooth curved path through  $(0,0)$ ,  $(1,1)$ ,  $(2,4)$ ,  $(3,9)$ . Which graphs are proportional? Explain both graph conditions.

**Graph A**



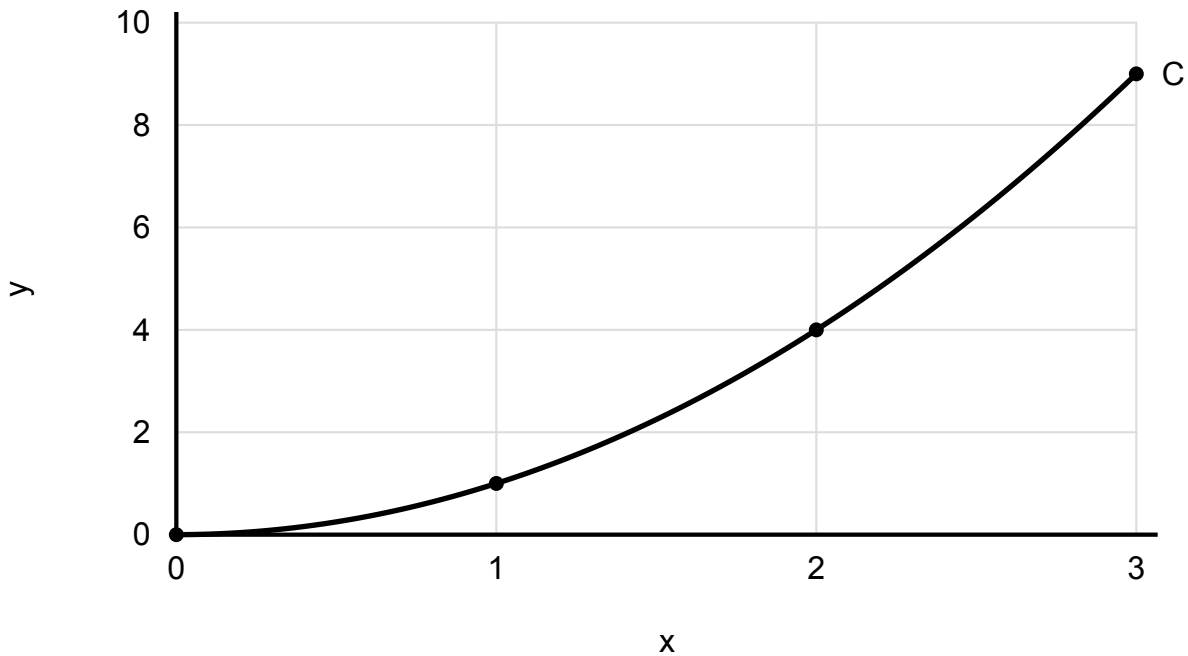
**Graph B**



## P03 | Continue and explain

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

**Graph C**



Use Graphs A and B on the preceding page and Graph C above. Which graphs are proportional? Explain both graph conditions.

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## Compare and apply

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

### C01

Delivery pump A is modeled by  $y = 3x$  liters after  $x$  minutes. Pump B operates at a constant rate through 8 minutes and has table  $(x,y)$ :  $(0,0)$ ,  $(2,7)$ ,  $(4,14)$ ,  $(6,21)$ . Which is faster? How much more water does it deliver in 8 minutes?

Show your reasoning and include units.

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### M04

A \$64 backpack is marked down 20%. Sales tax is 7.5% of the sale price. Find the final cost.

Show your reasoning and include units.

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# Free Sample Answer Key

One worked example + five practice tasks • Teacher copy

This key accompanies the separate free student sample. It includes only the sample tasks, excerpted unchanged from the full packet. Accept correct equivalent forms and valid explanations.

## W01

The quantity requested is liters per wall, so divide liters by walls:  $(3/4) \div (2/5) = (3/4) \times (5/2) = 15/8 = 1\ 7/8$  liters per wall. Check:  $(15/8) \times (2/5) = 3/4$  liter. The reverse quotient,  $8/15$ , would have units walls per liter.

## R01

$(5/6) \div (1/3) = 5/2 = 2.5$  L/min. In 2 minutes:  $2.5 \times 2 = 5$  liters.

## P02

The origin alone is insufficient. Nonzero ratios are 3, 3.5, and 4 km/h, so no single  $k$  works. The relationship is not proportional.

## P03

Only A is a straight line through the origin. B is straight but does not pass through the origin; C passes through the origin but is not straight. For A,  $k = 2$ . Both conditions are needed.

## C01

A: 3 L/min. B:  $7/2 = 3.5$  L/min. B is faster. In 8 minutes B gives 28 L and A gives 24 L, a difference of 4 L.

## M04

Discount =  $0.20 \times 64 = \$12.80$ . Sale price =  $\$51.20$ . Tax =  $0.075 \times 51.20 = \$3.84$ . Final cost =  $\$55.04$ .



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