

M7A Chapter 5 Practice Test

For Exercises 1 and 2, refer to the table below.
The table shows the heart rates and masses of different animals.

Animal	Heart Rate (beats/min)	Mass (g)
cat	150	2000
cow	66	800,000
hamster	450	60
horse	44	1,200,000

1. Express the ratio of a cow's heart rate to a hamster's heart rate as a fraction in simplest form.

$$\frac{66}{450} = \frac{22}{150} = \frac{11}{75}$$

1. $\frac{11}{75}$

2. Express the ratio of the mass of a cat to the mass of a cow as a fraction in simplest form.

$$\frac{2000}{800,000} = \frac{1}{400}$$

2. $\frac{1}{400}$

3. A 4-gallon jug of milk costs \$5.60. At what price should a $\frac{1}{2}$ -gallon jug be sold in order for the unit rate for both containers to be the same?

$$\frac{\$5.60}{4} = \frac{\$0.70}{\frac{1}{2}}$$

3. \$0.70 FOR A $\frac{1}{2}$ GALLON JUG

4. A boat dock measures 14 meters in length. Use a conversion factor to write this length to the nearest tenth of a foot. (1 foot = 0.3 meters)

$$\frac{14 \text{ m}}{1} \cdot \frac{1 \text{ ft}}{0.3 \text{ m}} = \frac{x}{14} \quad \frac{0.3x}{0.3} = \frac{14}{0.3}$$

$$x = 46.6$$

4. 46.7 ft

5. Auggie began working on a computer program. After $7\frac{1}{5}$ hours, he had completed $20\frac{1}{10}$ lines of code. What was his unit rate of programming in lines of code per hour?

$$\frac{\text{CODE}}{\text{HR}} = \frac{20.1}{7.2} = 2.7916 \quad \frac{2.7916 \text{ LINES OF CODE}}{1 \text{ HR}}$$

5. AUGGIE WRITES ABOUT 2.8 LINES OF CODE PER HOUR

6. Joel works as an auditor and earns \$36,920 per year. What is Joel's weekly earnings?

$$\frac{36920}{52} = 710$$

6. JOEL EARNS \$710 PER WEEK

7. Is the following statement true or false? Explain your reasoning.

$$\frac{\frac{3}{4}}{\frac{2}{16}} = \frac{36}{6} \quad \frac{3}{4} \cdot \frac{16}{2} = \frac{48}{8} = \frac{6}{1} = 6 \quad \frac{36}{6} = \frac{6}{1} = 6$$

7. TRUE

8. Write and solve a proportion to solve for x.

$$\frac{105}{3} = \frac{35}{1} = \frac{245}{7} \quad \begin{array}{l} 3 \text{ ounces of perfume for } \$105 \\ 7 \text{ ounces of perfume for } x \end{array}$$

$$\frac{105}{3} = \frac{x}{7} \quad \frac{105(7)}{3} = \frac{3x}{3}$$

$$245 = 245$$

8. \$245 FOR 7oz OF PERFUME

9. Ryan is building a model of the Texas Capitol Building. He is using a scale of 2 inches = 5 meters. What is the height of the model if the Texas Capitol Building is 95 meters high?

$$\frac{95}{5} = 19 \quad 19 \times 2 = 38 \text{ in}$$

9. THE MODEL IS 38 in TALL

For Exercises 10 and 11, determine whether the set of numbers in each table is proportional. If the relationship is proportional, determine the constant of proportionality.

10.

Birds	1	2	3	4
Beaks	1	2	3	4

CONSTANT = 1

NOT THE SAME

10. PROPORTIONAL

11.

Number of Pizzas	2	4	6	8
Number of Slices	16	32	60	64

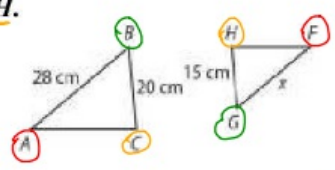
$\frac{2}{16} = \frac{1}{8}$ $\frac{6}{60} = \frac{1}{10}$ $\frac{8}{64} = \frac{1}{8}$

11. NON PROPORTIONAL

For Exercises 12 and 13, $\triangle ABC \sim \triangle FGH$.

12. Find the value of x .

$\frac{20}{x} = \frac{20}{15}$ $\frac{20x}{20} = \frac{420}{20}$
 $x = 21$



$\frac{28}{20} = \frac{20}{15} = \frac{4}{3}$

12. $x = 21$

13. If $m\angle A = 50^\circ$ and $m\angle B = 45^\circ$, what is $m\angle H$?

TOTAL 180° IN A TRIANGLE

$50^\circ + 45^\circ = 95^\circ$
 $\frac{180}{-95}$
 85

13. 85°

14. At the same time a 5-foot person casts a 2.5-foot shadow, a nearby tree casts an 8-foot shadow. How tall is the tree?

$\frac{\text{PERSON}}{\text{SHADOW}} = \frac{5}{2.5}$

$\frac{\text{TREE}}{\text{SHADOW}} = \frac{8 \times 2}{8} = 16$

THE TREE IS

14. 16 FT TALL

15. On a set of blueprints for a house, the scale is $\frac{1}{2}$ inch = 4 feet.

a. Find the actual length of a room that measures 3.2 inches on the blueprint.

$\frac{1}{2} = \frac{1}{8}$

$3.2(8) = 25.6$

b. Suppose an architect is updating the blueprints and decides to use a different scale. An actual length of 30 feet is drawn on the new blueprint as 4 inches. Complete the ratio for the new scale.

$\frac{1}{2}$ inch = \square feet

$\frac{30}{4} = \frac{7.5}{2} = \frac{3.75}{1}$

15a. 25.6 ft

15b. 3.75 ft

16. Explain a method for determining if the relationship shown in the graph is proportional.



$\frac{3}{1}$ $\frac{7}{2} = \frac{3.5}{1}$

16. _____