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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.

66 TO 450 $\frac{66}{450} = \frac{33}{225} = \frac{11}{75}$

1. $\frac{11}{75}$ ← "TO"

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

$\frac{2000}{800,000} = \frac{2}{800} = \frac{1}{400}$

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?

$\frac{4\text{ GAL}}{1} = \frac{4\text{ GAL COST}}{\frac{1}{2}\text{ GAL COST}}$ COST / SIZE $\frac{5.60}{4} = \frac{1.40}{1} = \frac{0.70}{\frac{1}{2}}$

3. \$0.70 FOR $\frac{1}{2}$ GAL.

4. A boat dock measures 14 meters in length. Use a conversion factor to write this length to the nearest tenth of a foot. [$1 meter \approx 3.279 foot$]

14 METER $\approx 3.279(14) \approx 45.91$

4. 45.9 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?

$\frac{1}{5} = \frac{2}{10} = 0.2$ $\frac{20.1}{7.2} = \frac{2.79}{1}$

5. 2.8 LINES PER HR

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

$\frac{36,920}{52} = 710$ 52 WEEKS IN A YEAR

6. \$710 PER WEEK

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

$\frac{3}{4} \cdot \frac{16}{2} = \frac{48}{8} = 6$ $\frac{\frac{3}{4}}{\frac{2}{16}} = \frac{36}{6}$ $\frac{3}{4} \div \frac{2}{16} = \frac{3}{4} \times \frac{16}{2} = \frac{12}{2} = \frac{6}{1} = 6$ $\frac{36}{6} = 6$

7. TRUE

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

$\frac{105}{3} = \frac{210}{6}$

3 ounces of perfume for \$105
7 ounces of perfume for x

$\frac{105}{3} = 35$ PER OUNCE 35(7)

8. \$245 FOR 7 oz.

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?

$\frac{95}{5} = 19$ $2(19) = 38$ in

$\frac{5m}{2in} = \frac{95m}{x}$ $\frac{190}{5} = \frac{5x}{5}$ $38 = x$

9. 38 in

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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

$\frac{1}{1}=1$ $\frac{2}{2}=1$ $\frac{3}{3}=1$ $\frac{4}{4}=1$

10. PROPORTIONAL

11.

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

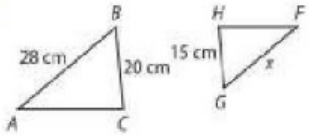
$\frac{16}{2}=8$ $\frac{32}{4}=8$ $\frac{60}{6}=10$

NON-PROPORTIONAL

11. _____

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

12. Find the value of x.



$\frac{x}{28}=\frac{15}{20}$ $\frac{20x}{20}=\frac{420}{20}$ $x=21$

INTERIOR ANGLES TOTAL 360°

12. 21 cm

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

$50°+45°=95°$ $180°-95°=85°$

180° 180°

13. _____

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?

5 ft, 2.5 ft; x ft, 8 ft

$\frac{1}{2}=\frac{5}{2.5}=\frac{x}{8}=16$

14. 16 ft TALL

15. On a set of blueprints for a house, the scale is $\frac{1}{2}$ inch = 4 feet. [1 foot = 12 inches]

$\frac{0.5\text{ in}}{4\text{ ft}}=\frac{3.2\text{ in}}{x\text{ ft}}$

$4(3.2)=0.5x$ $\frac{12.8}{0.5}=\frac{0.5x}{0.5}$ $25.6=x$

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

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

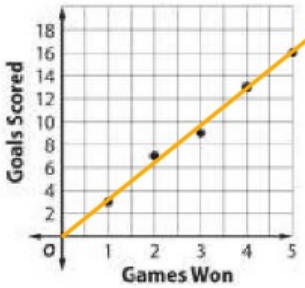
$\frac{30\text{ ft}}{4\text{ in}}=\frac{x}{0.5\text{ in}}=3.75$ (÷8)

3.75

15. a. 25.6 ft

b. 3.75 ft

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



NOT PROPORTIONAL, ALL THE POINTS ARE NOT ON THE LINE

16. SEE

$\frac{3}{4} \neq \frac{5}{15}$ 20, 45

$\frac{3}{4} = \frac{15}{20}$ 60, 60