

Test, Form 3A

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

Animal	Heart Rate (beats/min)	Mass (g)
cat	150	2000
cow	65	800,000
hamster	450	60
horse	44	1,200,000

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

1. $\frac{1}{3}$

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

2. $\frac{2}{3}$

3. A 6-gallon jug of syrup costs \$12.72. 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?

3. **\$1.06**

4. A patio has a length of 17 meters. Use a conversion factor to write this length to the nearest tenth of a foot.

4. **55.8 ft**

5. Byron began working on a computer program. After $4\frac{3}{4}$ hours, he had completed $32\frac{1}{4}$ lines of code. What was his unit rate of programming, in lines of code per hour?

5. **about 6.8 lines of code per hour**

6. Lana works as an accountant and earns \$78,832 per year. What is Lana's approximate weekly earnings?

6. **\$1516 per week**

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

$$\frac{\frac{2}{5}}{\frac{1}{15}} = \frac{42}{7}$$

7. **Yes; sample answer: The cross-products are equal.**

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

12 pounds of apples for \$13.80
 x pounds of apples for \$8.05

8. $\frac{12}{13.8} = \frac{x}{8.05}$
 $\rightarrow x = 7 \text{ lb}$

9. Cam is constructing a model of Mount Rushmore. The scale he is using is $\frac{1}{4}$ inch = 2 feet. If the model of George Washington's mouth is $2\frac{1}{4}$ inches wide, how wide is Washington's mouth at Mount Rushmore?

9. **18 ft**

Test, Form 3A *(continued)*

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.

Necklaces	10	20	30	40
Number of Beads	200	400	450	600

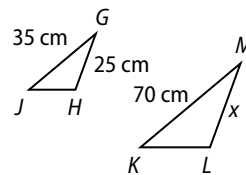
10. no

11.

Bikes	3	4	5	6
Wheels	6	8	10	12

11. yes; 2

For Exercises 12 and 13, $\triangle GHJ \sim \triangle MLK$.



12. Find the value of x .

12. 50 cm

13. If $m\angle G = 34^\circ$ and $m\angle H = 98^\circ$, what is $m\angle M$?

13. 34°

14. At the same time a 12-foot pole casts an 18-foot shadow, a nearby tree casts a 30-foot shadow. How tall is the tree?

14. 20 ft

15. Darnell is building a model submarine using a scale of 1 inch = 16 feet.

- a. The finished length of the model is $27\frac{1}{2}$ inches. What is the actual length of the submarine?
- b. Suppose Darnell creates another model and decides to use a different scale. An actual length of 42 feet is shown on the new model as 12 inches. Complete the ratio for the new scale.

1 inch = feet

a) 440 ft

15. b) 3.5

16. The relationship between the side length of a cube and the volume of the cube is shown in the table. Determine if the relationship is proportional using two different methods. Explain your reasoning.

Length of cube (ft)	1	3	4	8
Volume (ft³)	1	27	64	512

No; sample answer: **Method 1: compare the cross-products to see that they are not equal. Method 2: try to write an equation in the form $y = kx$ to find that there is no constant value of k .**

16.