GRADE 7 · UNIT 5 · PRACTICE TEST

Scaling With Proportional Relationships

24 points

Name_____
Date_____
Period_____

Show your work for problems that require calculations. Each numbered question or lettered part is worth 1 point.

Predictions from a random sample

10 points

1. A random sample of 48 of a school's 1,360 students found 18 who ride a bike.

a. Write the sample fraction in lowest terms. *1 pt*

b. Predict the number in the whole school. *1 pt*

2. In a random sample of voters, 55% said yes. The town has 4,800 voters. Predict how many would say yes. *1 pt*

3. A ranger tags 40 deer and returns them. Later she catches 220 at random, and 11 are tagged. Estimate the number of deer in the park. *1 pt*

4. In a random sample of 40 of a town's dogs, 6 have a microchip. The town's records show 66 dogs with a microchip. Predict the number of dogs in the town. *1 pt*

5. A school has 1,500 students. Which plan gives a random sample of 75? *1 pt*

- ○ A. Put every student's name in a hat and draw 75.
- ○ B. Ask the first 75 students to arrive.
- ○ C. Ask 75 students in three seventh-grade classes.
- ○ D. Ask 75 students at the basketball game.

6. In 40 random draws from a bag, 12 were green and 28 were not. What fraction of the draws were green? *1 pt*

- ○ A. $\frac{12}{28}$
- ○ B. $\frac{12}{40}$
- ○ C. $\frac{28}{40}$
- ○ D. $\frac{40}{12}$

7. In a random sample of laptops, 15% needed a new battery. A district owns 3,600 laptops. Predict how many need a new battery. *1 pt*

8. Two random samples of 48 students from the same school gave predictions of 510 and 425. Both were worked out correctly. Explain why the two predictions differ. *1 pt*

9. A random sample of 240 bolts found 6 that were bent. Predict the bent bolts in a shipment of 4,000. *1 pt*

Scale factors and scale drawings

14 points

10. A side of 8 cm becomes 20 cm in a scaled copy. Find the scale factor from the original to the copy. *1 pt*

11. A figure with perimeter 26 cm and area 36 cm^2 is scaled by k = 1.5.

a. Find the perimeter of the copy. *1 pt*

b. Find the area of the copy. *1 pt*

12. A shape of area 72 in^2 is scaled by k = 1/3. Find the new area. *1 pt*

13. A grid is 32 squares wide and 18 squares tall. A rectangle 7 squares wide and 5 squares tall is copied on it with a scale factor of 4. Does the copy fit? If not, by how many squares does it run over? *1 pt*

14. A plan uses the scale 1 cm : 12 m. Write the scale factor from the plan to the real thing. *1 pt*

15. A plan uses 1 in. : 4 ft. A wall is 6.5 in. on the plan. How long is the real wall? *1 pt*

16. A plan uses 1 in. : 3 ft. On the plan a room is 7 in. by 6 in.

a. Find the area on the plan. *1 pt*

b. Find the room's real area. *1 pt*

17. A map uses 1 in. : 40 mi. Two towns are really 280 mi apart. How far apart are they on the map? *1 pt*

18. A model boat is built at a scale of 1 : 15. The real boat is 6 m long. How long is the model, in centimeters? *1 pt*

19. A figure is scaled by k = 12. Which is true? *1 pt*

- ○ A. perimeter times 12, area times 12
- ○ B. perimeter times 144, area times 12
- ○ C. perimeter times 12, area times 144
- ○ D. perimeter times 144, area times 144

20. On a floor plan, 2 cm stands for 5 m. A hallway is 8 cm long on the plan. How long is the real hallway? *1 pt*

21. Every side of a rectangle is multiplied by 11. Explain why its area is multiplied by 121, not 11. *1 pt*