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Grade 7: Module 10 – Circles and Scale Drawings

Part 1

1. The drawing of a building has a scale of 1 inch to 30 feet. The height of the building in the drawing is 2.5 inches and the width of the building in the drawing is 1.5 inches. What is the actual height of the building?

A. 30 feet

B. 45 feet

C. 60 feet

D. 75 feet

2. A scale drawing uses a scale of 1 inch = 4 feet. The dimensions of the rectangular room on the scale drawing are 4.5 inches by 8 inches. What will be the actual area of the floor of the room after the construction project is completed?

A. 50 square feet

B. 100 square feet

C. 576 square feet

D. 1,152 square feet

3. The scale of a model train is 1 inch to 15 feet. One of the cars of the model train is 3.7 inches long. What is the length, in feet, of the actual train car?

A. 55.5 feet

B. 18.7 feet

C. 15 feet

D. 3.7 feet

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4. There is a rectangle on a scale drawing that represents a garden. The perimeter of the rectangle on the drawing is 16 inches. If the scale is 1 inch = 2.5 feet, what is the perimeter of the actual garden?

A. 13.5 feet

B. 18.5 feet

C. 40 feet

D. 80 feet

5. On the world map in class, 2 cm is equal to 150 miles. How many centimeters on the map would represent a distance of 525 miles?

A. 2 cm

B. 7 cm

C. 37.5 cm

D. 75 cm

6. On a scale drawing, a helicopter is 2.6 feet long. The scale factor is 8 to 1. What is the length of the actual helicopter?

A. 20.8 feet

B. 16.8 feet

C. 10.6 feet

D. 5.4 feet

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7. Hillary took a photograph of her house, which has an actual height of 28 feet. If the house measures 3.5 inches tall in the photograph, what is the scale factor?

A. scale factor of 3.5

B. scale factor of 8

C. scale factor of 24.5

D. scale factor of 98

8. A circle has a circumference of 12π inches. What is the area of the circle in terms of π? ($A = \pi r^2$)

A. 144π in.^{2}

B. 36π in.^{2}

C. 12π in.^{2}

D. 6π in.^{2}

9. If the area of a circle is 64π units^2, what is the diameter? ($A = \pi r^2$)

A. 16 units

B. 24 units

C. 64 units

D. 256 units

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10. A circle has a diameter of 18 units. What is the area of the circle? Use the π key on your calculator for the computation and round your final answer to the nearest hundredth. ($A = \pi r^2$)

A. 18 units^2

B. 81 units^2

C. 254.47 units^2

D. 20,611.99 units^2

11. Mr. Simpson designs a flower garden in the shape of a circle for his yard. The flower garden has a radius of 15 feet. What is the area of the circle in terms of π? ($A = \pi r^2$)

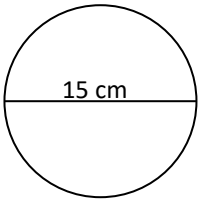
A. 225π ft^2

B. 90π ft^2

C. 30π ft^2

D. 15π ft^2

12. What is the area of the circle pictured below? ($A = \pi r^2$) Use the π key on your calculator for the computation and round your final answer to the nearest hundredth.



A. 7.5 cm^2

B. 15 cm^2

C. 47.12 cm^2

D. 176.71 cm^2

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13. Mr. Thomas installed a lawn sprinkler in his backyard. The sprinkler that he installed rotates and can spray an area with a radius of up to 12 ft. What is the maximum area the sprinkler can cover? Write the area of the circle in terms of π. ($A = \pi r^2$)

A. 12π ft^2

B. 24π ft^2

C. 144π ft^2

D. 576π ft^2

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Part 2

14. The circumference of the moon is the approximate distance around a circle with a radius of 1,736 kilometers. Find the circumference of the moon. Use the π key on your calculator for the computation and round your final answer to the nearest tenth.

Show your work.

Answer _____ kilometers

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15. On a road map, the distance from Philadelphia to Washington, D.C., is 6.8 centimeters. What is the actual distance between the cities if the map scale is 2 centimeters = 40 miles?

Show your work.

Answer _____

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Part 3

16. Judy baked a pizza with a diameter of 16 inches. Find the area of the pizza. Write the value of the area in terms of π.

Answer_____in.^{2}

Use the π key on your calculator for the computation and round your final answer to the nearest hundredth.($A = \pi r^2$)

Show your work.

Answer_____in.^{2}

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Answer Key for Grade 7 Module 10 Assessment – Form A			
Question Number	**Standard**	**Answer**	**Reasons for Answers**
1	7.G.A.1	D	A. The value from the problem B. The actual width of the building C. Doubled the 30 feet valued from the problem
2	7.G.A.1	C	A. Added the length and the width of the room (18 + 32 = 50) B. Found the perimeter of the room (18 + 32 = 50 × 2 = 100) D. Multiplied the length and the width and then doubled that answer (18 × 32 = 576 × 2 = 1,152)
3	7.G.A.1	A	B. Added the values of 15 and 3.7 from the problem C. The value of 15 from the problem D. The value of 3.7 from the problem
4	7.G.A.1	C	A. Subtracted the values of 16 and 2.5 in the problem (16 – 2.5 = 13.5) B. Added the two values of 16 and 2.5 in the problem (16 + 2.5 = 18.5) D. Doubled the perimeter of the problem
5	7.G.A.1	B	A. The value of 2 from the problem C. Divided 150 by 2 and then found half of that value D. The ratio of cm to miles is 75
6	7.G.A.1	A	B. Did not regroup from the tenths to the ones place when multiplying problem C. Added the values of 8 + 2.6 (8 + 2.6 = 10.6) D. Subtracted the values of 8 and 2.6 (8 – 2.6 = 5.4)
7	7.G.A.1	B	A. The measurement of the house in the photograph C. Subtracted the values in the problem (28 – 3.5 = 24.5) D. Multiplied the values in the problem (28 × 3.5 = 98)
8	7.G.B.4	B	A. Squared the diameter instead of the radius C. The circumference of the circle D. Did not square the radius of the circle
9	7.G.B.4	A	B. Used the value given in the problem (diameter) C. The value given in the problem D. Squared the diameter of the circle
10	7.G.B.4	C	A. The value given in the problem B. Squared the radius of the circle D. Squared the radius to find the value of 81 and then squared 81 before multiplying by π
11	7.G.B.4	A	B. Multiplied the diameter by 3 C. The diameter of the circle (706.5 ÷ 3.14 = 225; 225 ÷ 2 = 112.5) D. The radius of the circle
12	7.G.B.4	D	A. Value of the radius B. Value of the diameter

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			C. Value of the circumference
13	7.G.B.4	C	A. Radius of the circle B. Diameter of the circle D. Squared the diameter
14	7.G.B.4	See below	

Circumference of the moon: $C = \pi D$
Radius = 1,736 km so Diameter = 3,472 km
$C = \pi(3{,}472)$
$C = 10{,}907.60969$
$C = 10{,}907.6$ km

15	7.G.A.1	See below

Map distance is 6.8 cm
Scale is 2 cm = 40 miles

$$\frac{2}{40} = \frac{6.8}{x}$$

$2x = 40(6.8)$

$$\frac{2x}{2} = \frac{272}{2}$$

$x = 136$ miles

16	7.G.B.4	See below

Pizza diameter is 16 inches so radius is 8 inches
Area = πr^2
Area = $(\pi)(8^2)$
Area = 64π

Area = πr^2
Area = $(\pi)(8^2)$
Area = 64π
Area = 113.0973355
Area of the pizza is 113.1 in.^{2}

