

Area, Surface Area, and Volume: math test solutions, Grade 6 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Areas of basic shapes

/ 4 pts

- a. $\frac{1}{2} \times 11 \times 6 = 33 \text{ cm}^2$. (1 pt)
- b. $13 \times 5 = 65 \text{ cm}^2$. (1 pt)
- c. $\frac{8+12}{2} \times 7 = 10 \times 7 = 70 \text{ cm}^2$. (1 pt)
- d. $45 = \frac{1}{2} \times 15 \times h$, so $7.5h = 45$ and $h = 6 \text{ cm}$. (1 pt)

2 A house wall

/ 3 pts

Rectangle: $12 \times 5 = 60 \text{ m}^2$. (1 pt)

Triangle: $\frac{1}{2} \times 12 \times 4 = 24 \text{ m}^2$. (1 pt)

Total: $60 + 24 = 84 \text{ m}^2$. (1 pt)

3 Parallelogram on the grid

/ 3 pts

- (a) AB is horizontal: $6 - 1 = 5$ units. (1 pt)
- (b) The two horizontal sides are on $y = 2$ and $y = 6$, so the height is $6 - 2 = 4$ units. (1 pt)
- (c) $A = 5 \times 4 = 20$ square units. (1 pt)

4 A pyramid net

/ 3 pts

- (a) A square pyramid. (1 pt)
- (b) Base: $8 \times 8 = 64$. Each triangle: $\frac{1}{2} \times 8 \times 5 = 20$. (1 pt) $SA = 64 + 4 \times 20 = 144$ in². (1 pt)

5 Surface area of prisms

/ 4 pts

- (a) Faces: $9 \times 4 = 36$, $9 \times 3 = 27$, $4 \times 3 = 12$. (1 pt)
 $SA = 2(36 + 27 + 12) = 2 \times 75 = 150$ in². (1 pt)
- (b) Two ends: $2 \times \frac{1}{2} \times 3 \times 4 = 12$ cm². (1 pt) Rectangles: $(3 + 4 + 5) \times 10 = 120$ cm².
 $SA = 12 + 120 = 132$ cm². (1 pt)

6 Fractional volume

/ 3 pts

- (a) $V = \frac{9}{2} \times 2 \times \frac{5}{2} = 9 \times \frac{5}{2} = \frac{45}{2} = 22.5$ ft³. (2 pts)
- (b) Each cube has volume $\frac{1}{8}$ ft³, so $22.5 \div \frac{1}{8} = 22.5 \times 8 = 180$ cubes. (1 pt)



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