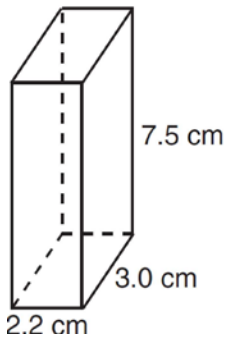
A.G.2: Surface Area: Use formulas to calculate volume and surface area of rectangular solids and cylinders

1 The rectangular prism shown below has a length of 3.0 cm, a width of 2.2 cm, and a height of 7.5 cm.



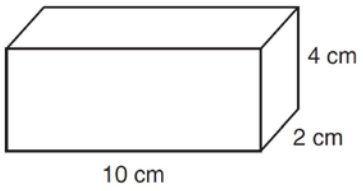
What is the surface area, in square centimeters?
1) 45.6
2) 49.5
3) 78.0
4) 91.2

2 Mrs. Ayer is painting the outside of her son's toy box, including the top and bottom. The toy box measures 3 feet long, 1.5 feet wide, and 2 feet high. What is the total surface area she will paint?
1) 9.0 ft^2
2) 13.5 ft^2
3) 22.5 ft^2
4) 27.0 ft^2

3 How many square inches of wrapping paper are needed to entirely cover a box that is 2 inches by 3 inches by 4 inches?
1) 18
2) 24
3) 26
4) 52

4 If the volume of a cube is 8 cubic centimeters, what is its surface area, in square centimeters?
1) 32
2) 24
3) 12
4) 4

5 Find the volume, in cubic centimeters, *and* the surface area, in square centimeters, of the rectangular prism shown below.



6 The length and width of the base of a rectangular prism are 5.5 cm and 3 cm. The height of the prism is 6.75 cm. Find the *exact* value of the surface area of the prism, in square centimeters.

7 A plastic storage box in the shape of a rectangular prism has a length of $x + 3$, a width of $x - 4$, and a height of 5. Represent the surface area of the box as a trinomial in terms of x.

8 The base of a closed right circular cylinder has a diameter of 5 cm. If the height of the cylinder is 8 cm, what is the surface area of the cylinder, to the *nearest square centimeter*?
1) 157
2) 165
3) 408
4) 628

A.G.2: Surface Area: Use formulas to calculate volume and surface area of rectangular solids and cylinders
Answer Section

1 ANS: 4
SA = $2lw + 2hw + 2lh = 2(3)(2.2) + 2(7.5)(2.2) + 2(3)(7.5) = 91.2$

REF: 081216ia

2 ANS: 4
SA = $2lw + 2hw + 2lh = 2(3)(1.5) + 2(2)(1.5) + 2(3)(2) = 27$

REF: 060827ia

3 ANS: 4
SA = $2lw + 2hw + 2lh = 2(2)(3) + 2(4)(3) + 2(2)(4) = 52$

REF: 011029ia

4 ANS: 2
$s^3 = 8$. $6 \times (2 \times 2) = 24$

$s = 2$

REF: 081325ia

5 ANS:
80, 136 $V = lwh = 10 \cdot 2 \cdot 4 = 80$ $SA = 2lw + 2hw + 2lh = 2 \cdot 10 \cdot 2 + 2 \cdot 4 \cdot 2 + 2 \cdot 10 \cdot 4 = 136$

REF: 081035ia

6 ANS:
147.75 $2 \times 5.5 \times 3 + 2 \times 6.75 \times 3 + 2 \times 5.5 \times 6.75 = 147.75$

REF: 011231ia

7 ANS:
$2(x + 3)(x - 4) + 2(5)(x - 4) + 2(x + 3)(5)$

$2(x^2 - 4x + 3x - 12) + 10(x - 4) + 10(x + 3)$

$2x^2 - 2x - 24 + 10x - 40 + 10x + 30$

$2x^2 + 18x - 34$

REF: 061136ia

8 ANS: 2
$SA = 2\pi(2.5)^2 + 2\pi(2.5)(8) \approx 165$

REF: 061514ia