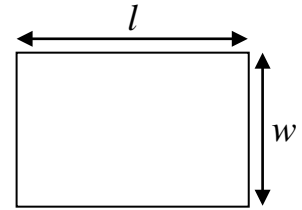


Worksheet 4-9: Polynomial Applications to 2-D Measurements

The area of any rectangle can be found using the formula:

$$A = lw$$

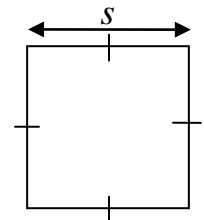
where A is the area of the rectangle,
 l is the length of the rectangle, and
 w is the width of the rectangle.



The area of any square can be found using the formula:

$$A = s^2 \text{ or } s \times s$$

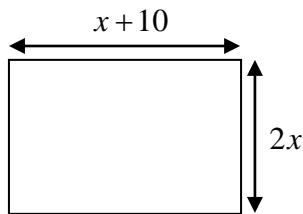
where A is the area of the square, and
 s is the side length of the square,



Practice:

1. Write a simplified algebraic expression to represent the area of each figure.

(a)



$$l = x + 10, w = 2x$$

$$A = lw$$

$$A = (x + 10)(2x)$$

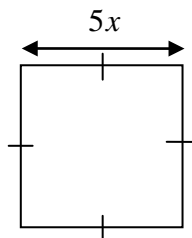
$$A = 2x(x + 10)$$

$$A = (2x)(x) + (2x)(10)$$

$$A = 2x^2 + 20x$$

Area of the figure can be represented by $4x^2 + 20$.

(b)



$$s = 5x$$

$$A = s^2$$

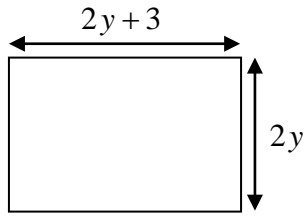
$$A = (5x)^2$$

$$A = (5x)(5x)$$

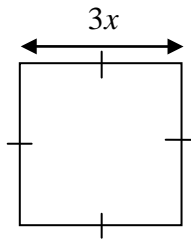
$$A = 25x^2$$

Area of the figure can be represented by $25x^2$.

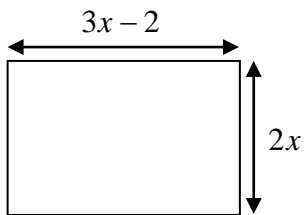
(c)



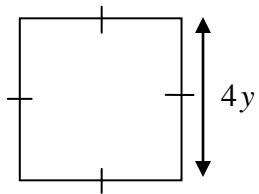
(d)



(e)



(f)



Answers: 1. (a) $2x^2 + 20$, (b) $25x^2$, (c) $4y^2 + 6y$, (d) $9x^2$, (e) $6x^2 - 4x$, (f) $16y^2$.

2. There is a rectangular parking lot near George Harvey C. I. $3x$ represents the length of the parking lot, and $4x - 7$ represents the width of the parking lot. (*Hint: Draw a diagram first.*)

(a) Write a simplified algebraic expression for the area of the parking lot.

(b) Find the area of the parking lot if $x = 3$ m.

3. A flower garden has a shape of a square. $12a$ represents the side length of the garden.

(a) Write a simplified algebraic expression for the area of the flower garden.

(b) Find the area of the flower garden if $a = 2$ m.

4. Ms. Chor's bedroom is rectangular in shape. The length of her room can be represented as $24y$, and the width of her room can be represented as $12y$.

(a) Write a simplified algebraic expression to represent the area of Ms. Chor's room.

(b) Find the area of Ms. Chor's room if $y = 0.5$ m.

5. Ms. Chor saw a table in a furniture store as shown on the right. She wants to make the table on her own and tries to cut out a piece of wood as the table top. The side length of the table top can be represented as $11z$.



(a) Write a simplified algebraic expression for the area of table top.

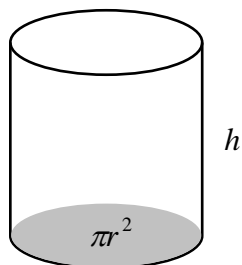
(b) Find the area of the table top if $z = 2$ cm.

Worksheet 4-10: Polynomial Applications to 3-D Measurements

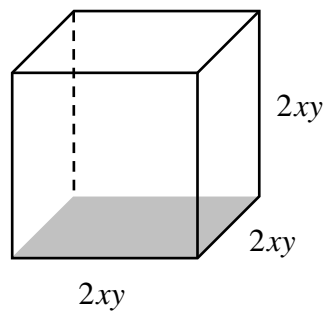
$\text{Volume of a Prism} = \text{Base Area} \times \text{Height}$
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1. Write a polynomial for each volume.

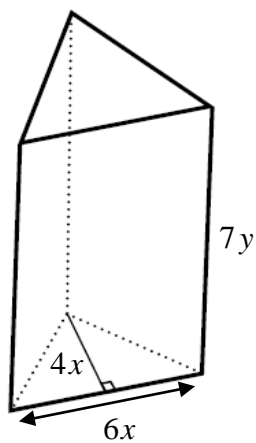
(a)



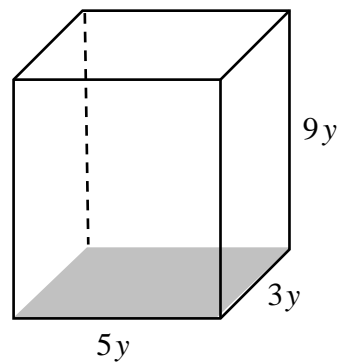
(b)



(c)



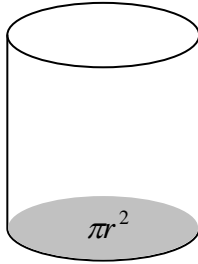
(d)



Height = Volume of Prism \div Base Area

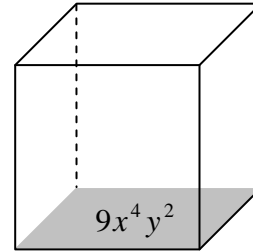
2. Find the height of each solid.

(a)



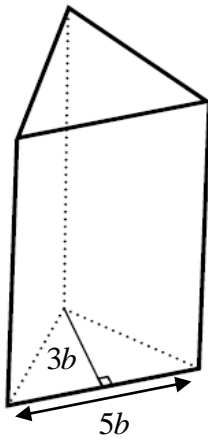
$$V = 6\pi r^3$$

(b)



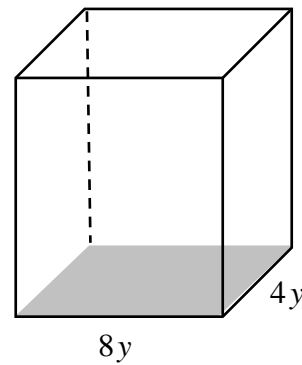
$$V = 27x^6 y^3$$

(c)



$$V = 60ab^2$$

(d)



$$V = 320y^3$$

Answers: 1. (a) $\pi r^2 h$, (b) $8x^3 y^3$, (c) $84x^2 y$, (d) $135y^3$; 2. (a) $6r$, (b) $3x^2 y$, (c) $8a$, (d) $10y$