

**NOTES:** Area, Perimeter and Volume in terms of x

**QUESTIONS:** | **NOTES:**

Perimeter: Add all sides

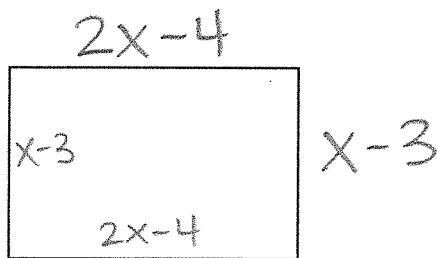
Given a rectangle with length  $(2x - 4)$  and width  $(x - 3)$  find the...

Rectangle

$P = 2L + 2W$

$A = LW$

**Perimeter** in terms of x

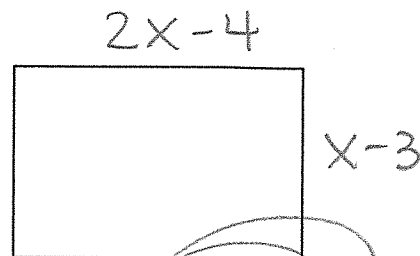


$$P = 2(2x - 4) + 2(x - 3)$$

$$= \underline{4x} - 8 + \underline{2x} - 6$$

$P = 6x - 14$

**Area** in terms of x



$$A = (2x - 4)(x - 3)$$

$$= 2x^2 - 6x - 4x + 12$$

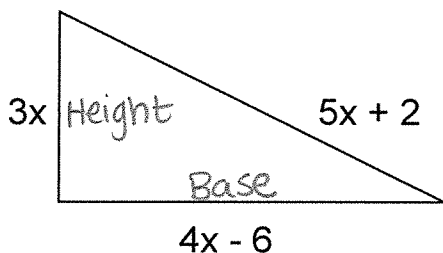
$A = 2x^2 - 10x + 12$

Triangle

P = add all sides

$A = \frac{bh}{2}$

Find the perimeter and area of the following triangle.



Perimeter:  $12x - 4$

$P = (\underline{3x}) + (\underline{4x} - 6) + (\underline{5x} + 2)$

$$A = \frac{(4x - 6)(3x)}{2}$$

$$= \frac{12x^2 - 18x}{2}$$

Area:  $6x^2 - 9x$

Q: If the perimeter is 80, what is the value of x?

$$P = 12x - 4$$

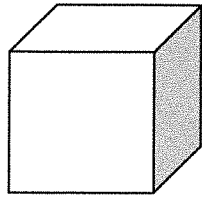
$$80 = 12x - 4$$

$$\begin{array}{r} +4 \phantom{00} \\ 84 = 12x \\ \hline 12 \phantom{00} \end{array}$$

$x = 7$

Find the volume of the following:

Cube:  $V = s^3$



$$s = 2b^3c^2$$

$$V = (2b^3c^2)^3$$

$$= 2^3 b^9 c^6$$

$$V = 8b^9c^6$$

$$V = Bh$$

$$= LWH$$

Find the volume of a rectangular prism with a lengths of  $2x + 4$ , and width of  $x + 1$ , and a height of  $x^2 + 9$

$$(2x+4)(x+1)$$

$$2x^2 + 2x + 4x + 4$$

$$2x^2 + 6x + 4$$

$$(x^2+9)(2x^2+6x+4)$$

	$2x^2$	$6x$	$4$
$x^2$	$2x^4$	$6x^3$	$4x^2$
$9$	$18x^2$	$54x$	$36$

$$V = 2x^4 + 6x^3 + 22x^2 + 54x + 36$$

What is the surface area of the cylinder at the right? Write your answer in simplified form.

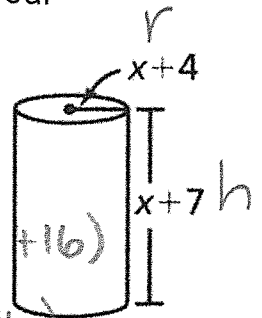
$$S = 2\pi r h + 2\pi r^2$$

$$= 2\pi (x+4)(x+7) + 2\pi (x+4)(x+4)$$

$$= 2\pi (x^2 + 4x + 7x + 28) + 2\pi (x^2 + 4x + 4x + 16)$$

$$= 2\pi (x^2 + 11x + 28) + 2\pi (x^2 + 8x + 16)$$

$$= 2\pi x^2 + 22\pi x + 56\pi + 2\pi x^2 + 16\pi x + 32\pi$$



$$S = 4\pi x^2 + 38\pi x + 88\pi$$

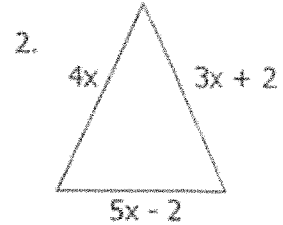
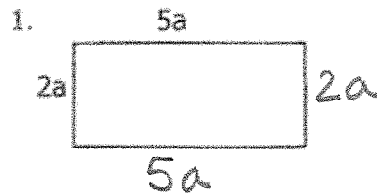
# 7-3 Practice

Form K

## Multiplying Binomials

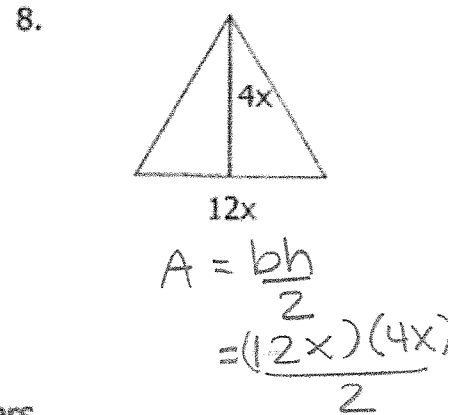
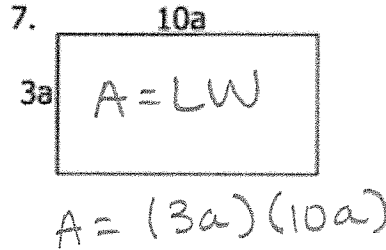
Find the perimeter of each. Simplify your answers.

1. 14a  
 2. 12x



Find the area of each. Simplify your answers.

7. 30a<sup>2</sup>  
 8. 24x<sup>2</sup>

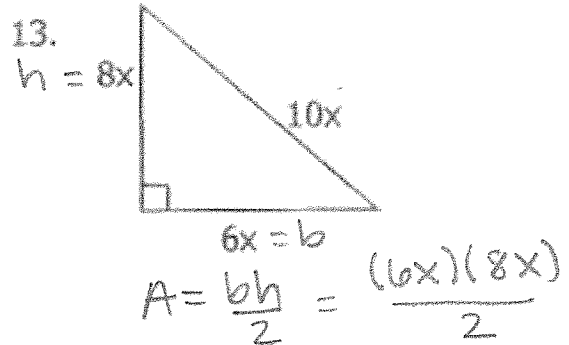


Find the area and perimeter of each. Simplify your answers.

13. A = 24x<sup>2</sup>

P = 24x

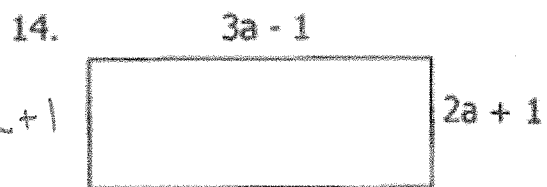
$P = (8x) + (6x) + (10x)$



14. A = 6a<sup>2</sup> + a - 1

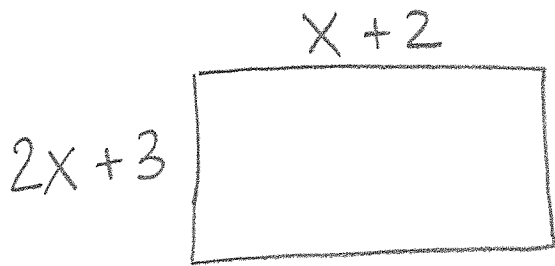
P = 10a

$A = (2a+1)(3a-1)$   
 $= 6a^2 - 2a + 3a - 1$   
 $6a^2 + a - 1$



$P = 2(2a+1) + 2(3a-1)$   
 $= 4a + 2 + 6a - 2$

1. A rectangle has length  $(x + 2)$  in. and width  $(2x + 3)$  in. Find an expression that represents the area of the rectangle. Write the expression in simplified form.



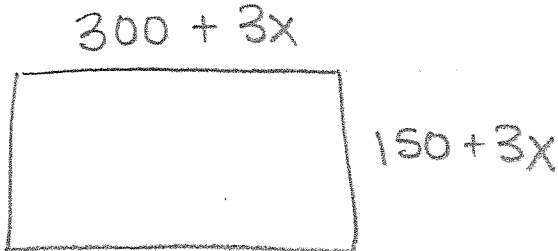
$$A = LW$$

$$= (x + 2)(2x + 3)$$

$$A = 2x^2 + 3x + 4x + 6$$

$$A = 2x^2 + 7x + 6$$

2. A community center is expanding the size of its rectangular meeting hall. The hall is currently 300 ft long and 150 ft wide. The center plans to expand both the length and the width of the meeting hall by  $3x$  ft. Write a polynomial in standard form representing the area of the expanded meeting hall?



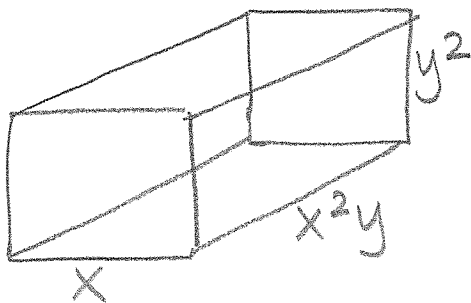
$$A = LW$$

$$= (300 + 3x)(150 + 3x)$$

$$= 45000 + 900x + 450x + 9x^2$$

$$A = 9x^2 + 1350x + 45000$$

3. A rectangular prism has a width of  $x$  inches, a length of  $x^2y$  inches, and a height of  $y^2$  inches. What is the volume in cubic inches of this rectangular prism?



$$V = LWH$$

$$V = (x)(x^2y)(y^2)$$

$$V = x^3y^3$$