

## Topic 1: Solving Equations

Solve the following equations that have variables on both sides:

1.  $6r + 7 = 13 + 7r$

2.  $5 + 2x = 2x + 6$

3.  $-7x - 3x + 2 = -8x - 8$

4.  $-8n + 4(1+5n) = -6n - 14$

5.  $-14 + 6b + 7 - 2b = 1 + 5b$

6.  $4n - 40 = 7(-2n + 2)$

7.  $n - 3n = 14 - 4n$

8.  $-31 - 4x = -5 - 5(1 + 5x)$

**Solve the following equations with fractions:**

1.  $\frac{3}{4}t = \frac{2}{3}$

2.  $y - \frac{2}{5} = -\frac{1}{3}$

3.  $\frac{2}{3} = -\frac{3}{5}t$

4.  $\frac{1}{4} + \frac{1}{2}t = 4$

5.  $\frac{3}{4}x = \frac{1}{2}$

6.  $\frac{1}{4}x + x = -3 + \frac{1}{2}x$

7.  $-\frac{5}{6}x = \frac{3}{4}$

8.  $\frac{1}{3} + 2m = m - \frac{3}{2}$

9.  $2y - \frac{3}{5} = \frac{1}{2}$

10.  $m + \frac{2}{3} = \frac{1}{4}m - 1$

**Solve the following multi-step equations:**

1.  $6(3m + 5) = 66$

2.  $3p - 4 = 31$

3.  $3(4y - 8) = 12$

4.  $x - 2(x + 10) = 12$

5.  $-5(x - 3) = -25$

6.  $-15 = 5(3q - 10) - 5q$

7.  $42 = 3(2 - 3h)$

8.  $-3 = -3(2t - 1)$

9.  $-10 = 5(2w - 4)$

10.  $11.3 - 7.2f = -3.82$

## Topic 2: Factoring Polynomials

Factor the polynomials below completely:

1.  $x^2 + 5x + 6$

2.  $x^2 - 2x - 3$

3.  $x^2 - 5x$

4.  $x^2 - 4$

5.  $2x^2 - 18x - 72$

6.  $x^2 - 12x - 28$

7.  $4x^2 - 20x + 25$

8.  $24x^2 - 6$

9.  $2x^2 - x - 3$

10.  $8x^2 - 10x - 3$

8.  $2x^2 - 11x + 21$

12.  $6x^2 + 26x + 24$

### Topic 3: Solving Quadratics

Solve the following quadratics by factoring:

1.  $x^2 - 11x + 19 = -5$

2.  $n^2 + 7n + 15 = 5$

3.  $n^2 + 3n - 12 = 6$

4.  $9x^2 - 24x + 16 = 0$

5.  $7r^2 - 14r = -7$

6.  $2x^2 - 3x - 2 = 0$

**Solve the following quadratic equations using the Quadratic Formula:**

1.  $6x^2 + 11x - 35 = 0$

2.  $f^2 + 9f + 4 = 0$

3.  $m^2 - 3m - 1 = 0$

4.  $3x^2 + 8x + 2 = 0$

5.  $4t^2 - 9t + 1 = 0$

6.  $3w^2 + 8w + 3 = 0$

## Topic 4: Solving Systems of Equations

Solve the following Systems of Equations Using Substitution:

1.  $2x - 9y = 14$   
 $x - 7 = -6y$

2.  $-5x + 2y = 9$   
 $y - 7x = 0$

3.  $3x + 4y = -23$   
 $x - 3y = 1$

4.  $x + 3y = 25$   
 $4x + 5y = 9$

5.  $-5x + y = -2$   
 $-3x + 6y = -12$

6.  $-7x - 2y = -13$   
 $x - 2y = 11$

**Solve the following Systems of Equations by Elimination:**

1.  $-5x + 8y = 0$   
 $-7x - 8y = -96$

2.  $-7y - 4x = 1$   
 $7y - 2x = 53$

3.  $x - 2y = 14$   
 $x + 3y = 9$

4.  $8y - 9x = -3$   
 $5y - 8x = 10$

5.  $-5y + 6x = 40$   
 $3y - 8x = -46$

6.  $-9y + 4x - 11 = 0$   
 $-3y + 10x + 31 = 0$



## Topic 5: Simplifying & Multiplying Radicals

Simplify the following radicals:

1.  $\sqrt{60}$

2.  $-\sqrt{128}$

3.  $5\sqrt{320}$

4.  $2\sqrt{45}$

5.  $\frac{20\sqrt{50}}{4\sqrt{2}}$

6.  $\frac{\sqrt{21}}{7\sqrt{2}}$

**Multiply and then simplify the following radicals:**

1.  $\sqrt{5} \cdot \sqrt{45}$

2.  $(\sqrt{5})^2$

3.  $\sqrt{6} \cdot \sqrt{30}$

4.  $4(\sqrt{10})^2$

5.  $\sqrt{6} \cdot \sqrt{2}$

6.  $\sqrt{25} \cdot \sqrt{25}$

## Topic 6: Finding Area, Surface Area and Volumes

### AREA

Triangle	$A = \frac{1}{2}bh$
Rectangle or Parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$

### SURFACE AREA

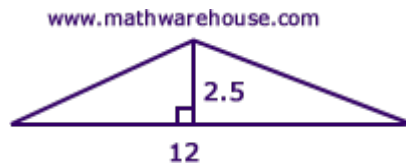
	Lateral	Total
Prism	$S = Ph$	$S = Ph + 2B$
Pyramid	$S = \frac{1}{2}Pl$	$S = \frac{1}{2}Pl + B$
Cylinder	$S = 2\pi rh$	$S = 2\pi rh + 2\pi r^2$

### VOLUME

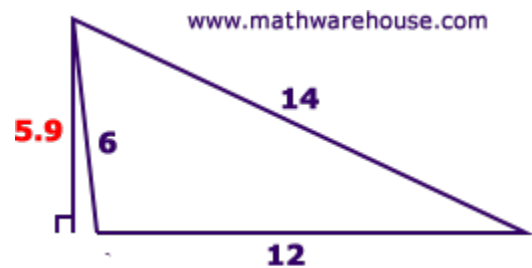
Prism or Cylinder	$V = Bh$
Pyramid or Cone	$V = \frac{1}{3}Bh$

In this section, be sure to write each formula, show the values you substitute in, and then write your answer with units of measure. ]

1. Find the area of the triangle.

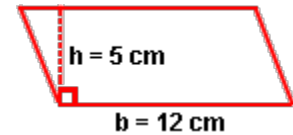


2. Find the area of the triangle.

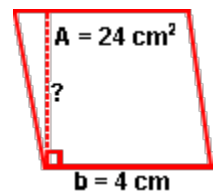


3. The perimeter of a rectangle is 20 centimeters. The length is 6 centimeters. What is the area of the rectangle? Be sure to draw and label a diagram.

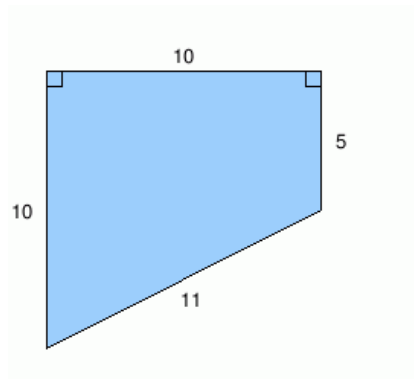
4. Find the area of the parallelogram.



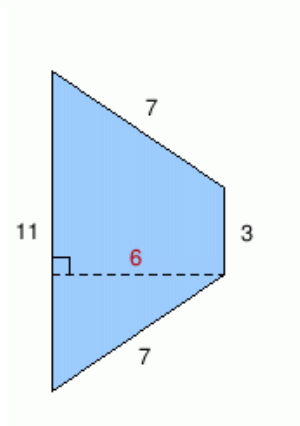
5. Find the height of the parallelogram.



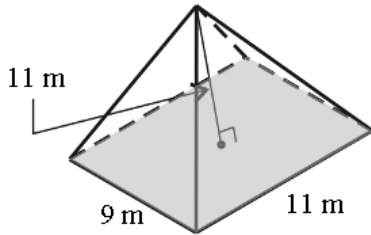
6. Find the area of the trapezoid.



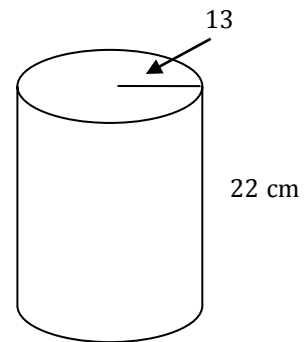
7. Find the area of the trapezoid.



8. Find the volume of the pyramid. The base is rectangular.



9. A cylinder has a radius of 13 cm and a height of 22 cm. Find the surface area and volume.



10. Find the surface area and volume of the triangular prism below.

