

**PREREQUISITE SKILLS**

These are the concepts that you **NEED** to know and be able to **DO**. You learned them all in grade 10 math.

**1. Operations with Integers:** Evaluate

a)  $3 + (-6)(-4)$

b)  $(-5)^2$

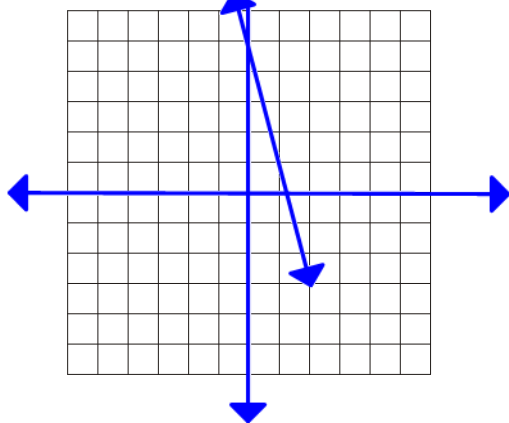
c)  $-3^4$

**2. Operations with Rational Numbers** Evaluate  $\frac{6}{5} \times \frac{2}{5} \div \frac{-4}{15}$

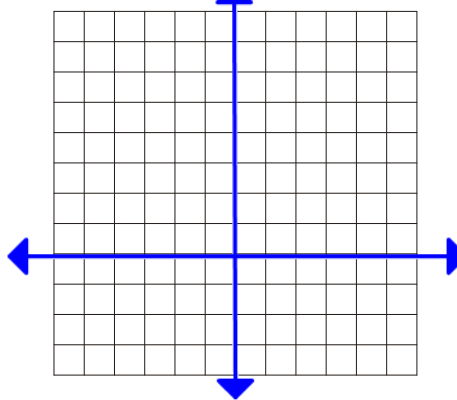
**3. Evaluating Algebraic Expressions:** Find the value of  $5x^2y + 6xy - 4y^2 - 1$  if  $x = -3$  and  $y = 2$

**4. Graphing :** Name the type of relation, the original (untransformed) function, list the transformations, then graph.

a)  $y = -4x + 5$



b)  $y = 2(x - 3)^2 - 4$



**5. Expanding and Simplifying Algebraic Expressions:** Expand and simplify.

a)  $5x^2y(2xy - 3y^2)$

b)  $(3x + 2y)(2x - 5y)$

c)  $\frac{(x^2y^3)^0(6x^3y^4)^2}{(3xy^3)^3}$

6. **Factoring:** Factor fully.

a)  $x^2 - 25y^2$

b)  $x^2 - 5x - 6$

c)  $6x^2 + 14x + 4$

7. **Solving Equations:** Solve.

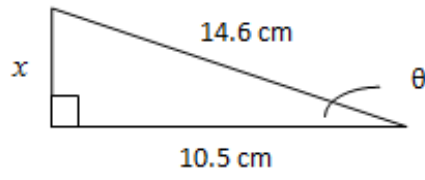
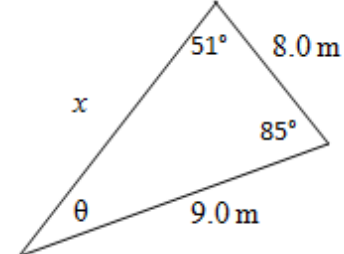
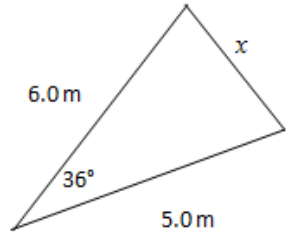
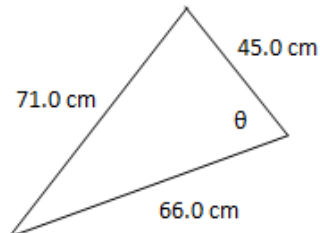
a)  $2x + 5 = 9$

b)  $x^2 - 4x + 3 = 0$

c)  $3x^2 - 8x = 4$

8. **Quadratics – Completing the Square** Find the vertex of  $h = -2t^2 + 12t + 25$

9. **Trigonometry:** Determine the value of  $\theta$  rounded to nearest degree and/or  $x$ , rounded to nearest tenth

a) 	
b) 	
c) 	
d) 	

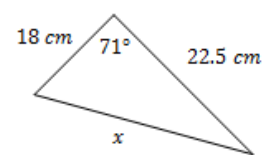
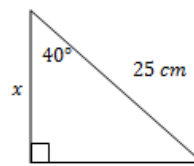
MORE PRACTICE

<p>1. For the line <math>3x - 5y = 10</math> state:</p> <ul style="list-style-type: none"><li>a) the slope</li><li>b) the <math>y</math>-intercept</li></ul>	<p>9. Factor fully.</p> <ul style="list-style-type: none"><li>a) <math>9x^3 - 25x</math></li> <li>b) <math>6x^2 + 10x + 4</math></li></ul>
<p>2. Expand and Simplify <math>(3x - 1)(4x + 5)</math></p>	<p>10. Solve each equation using the most appropriate method. Give answers to one decimal place only where appropriate.</p> <ul style="list-style-type: none"><li>a) <math>x^2 + 4x - 21 = 0</math></li> <li>b) <math>(x + 2)(x - 3) = 3(x + 1) - 9</math></li> <li>c) <math>0 = x^2 + 4x - 1</math></li></ul>
<p>3. Factor</p> <ul style="list-style-type: none"><li>a) <math>m^2 - 81</math></li> <li>b) <math>x^2 - 7x - 18</math></li></ul>	<p>11. Complete the square and state the vertex.</p> $y = x^2 + 2x - 25$
<p>4. the roots of the equation:</p> <ul style="list-style-type: none"><li>a) <math>(x - 7)(x + 6) = 0</math></li></ul>	<p>12. Evaluate. <math>4^{-2} + \left(\frac{3}{2}\right)^2 - 9^0</math></p>

b)  $2x^2 - 3x + 1 = 0$

5. Given  $y = -3(x - 7)^2 + 5$ , state:
- a) vertex
  - b) max or min value
  - c) direction of opening

13. Solve for the unknown indicated on each diagram to one decimal place.



6. Evaluate.
- a)  $6^0$
  - b)  $2^{-3}$

14. An archway has been built over a one-way road. The arch can be modeled by  $h = -2x^2 + 8x$  where  $h$  is the height of the arch in metres and  $x$  is the horizontal distance in metres.
- a) How wide is the arch?
  - b) At what horizontal distance (to one decimal place) is the height 3 metres?
  - c) What is the maximum height of the arch?

<p>7. Solve each system algebraically using the method indicated. Show proper form.</p>		<p>15. Graph <math>y = x^2</math> in pencil and <math>y = -2(x - 3)^2 + 4</math> in colour. List the transformations using proper mathematical language.</p>	
<p>a) SUBSTITUTION  <math>x + 4y = 7</math>  <math>3x - 2y = -21</math></p>	<p>b) ELIMINATION  <math>\frac{2x}{3} - \frac{y}{2} = 2</math>  <del><math>6x - 3y = 12</math></del></p>	<p>16. Solve.</p> <p>a) <math>3x + 4 = -5</math>      d) <math>\frac{3}{x} = \frac{7}{11}</math></p> <p>b) <math>\frac{x+4}{2} = 12</math>      e) <math>3(x + 3) = 5(x + 2) + 1</math></p>	
<p>8. Expand and simplify.</p> <p>a) <math>3(x + 8)(2x - 5)</math></p> <p>b) <math>(4x + 7)^2</math></p>		<p>c) <math>\frac{x}{3} = \frac{4}{5}</math>      f) <math>\frac{r+5}{4} + \frac{r-2}{3} = 7</math></p>	