Name: _____ Date: _____

Factoring Review Continued

1) The height of a model rocket launched into the air from a rooftop is given by the quadratic equation $h = -16t^2+64t + 80$, where t is the time in seconds since launch, and h is measured in feet. At what time does the rocket land on the ground?

The rocket lands on the ground in _____ seconds.

2) A missile is fired with an initial upward velocity of 2320 foot per second. The height can be modeled by $h = -16t^2 + 2320t$, where h is the height in feet above the ground and t is the time in seconds. Find the time it take the missile to reach a height of 40,000 feet.

The missile will have a height 40,000 feet at _____ seconds and at _____ seconds.

3) What extra step is involved in factoring $ax^2+ bx + c = 0$ when a is not equal to 1?

4) A model rocket is fired from the ground at time t = 0, and its height is given (in cm) by the formula $h = -490t^2 + 1470t$, where t is measured in seconds.

a) Write an equation to find when the height of the rocket is 980 cm.

Answer:_____

b) Solve the equation by factoring.

Answer: _____

a) Explain why there are two solutions to this problem.

5) As a satellite falls from outer space onto Mars, its distance in miles from the planet is given by the formula $d = -9t^2 + 776$, where t is the number of hours it has fallen.

a) Write an equation to find when the satellite will be 200 miles away from Mars.
Answer: _____

b) Solve the equation by factoring.

Answer: _____

c) Explain why only one of these solutions makes sense for this problem.

_____

_____

Regents Questions:

1 Keith determines the zeros of the function $f(x)$ to be -6 and 5. What could be Keith's function?
1) $f(x) = (x+5)(x+6)$
2) $f(x) = (x+5)(x-6)$
3) $f(x) = (x-5)(x+6)$
4) $f(x) = (x-5)(x-6)$

2 What is the solution set of the equation $(x-2)(x-a) = 0$?
1) -2 and a
2) -2 and $-a$
3) 2 and a
4) 2 and $-a$

3 Which equation has the same solutions as $2x^2 + x - 3 = 0$
1) $(2x-1)(x+3) = 0$
2) $(2x+1)(x-3) = 0$
3) $(2x-3)(x+1) = 0$
4) $(2x+3)(x-1) = 0$

4 The zeros of the function $f(x) = 2x^2 - 4x - 6$ are
1) 3 and -1
2) 3 and 1
3) -3 and 1
4) -3 and -1

5 The zeros of the function $f(x) = 3x^2 - 3x - 6$ are
1) -1 and -2
2) 1 and -2
3) 1 and 2
4) -1 and 2

6 Solve $8m^2 + 20m = 12$ for m by factoring.

7 In the equation $x^2 + 10x + 24 = (x+a)(x+b)$, b is an integer. Find algebraically *all* possible values of b.

8 The function $r(x)$ is defined by the expression $x^2 + 3x - 18$. Use factoring to determine the zeros of $r(x)$. Explain what the zeros represent on the graph of $r(x)$.

9 Janice is asked to solve $0 = 64x^2 + 16x - 3$. She begins the problem by writing the following steps:

Line 1 $0 = 64x^2 + 16x - 3$
Line 2 $0 = B^2 + 2B - 3$
Line 3 $0 = (B+3)(B-1)$

Use Janice's procedure to solve the equation for x. Explain the method Janice used to solve the quadratic equation.

1 If the domain is the set of real numbers, what is the solution set for the equation $x^2 + 4 = 0$?

1) $\{-2\}$
2) $\{2\}$
3) $\{2,-2\}$
4) $\{\ \}$

2 What is the solution set of the equation $3x^2 = 48$?

1) $\{-2,-8\}$
2) $\{2,8\}$
3) $\{4,-4\}$
4) $\{4,4\}$

3 A solution of the equation $\frac{x^2}{4} = 9$ is

1) 12
2) 6
3) 3
4) $\frac{3}{2}$

4 If $4x^2 - 100 = 0$, the roots of the equation are

1) –25 and 25
2) –25, only
3) –5 and 5
4) –5, only

5 Which value of x is a solution to the equation $13 - 36x^2 = -12$?

1) $\frac{36}{25}$
2) $\frac{25}{36}$
3) $-\frac{6}{5}$
4) $-\frac{5}{6}$

6 A student is asked to solve the equation $4(3x - 1)^2 - 17 = 83$. The student's solution to the problem starts as $4(3x - 1)^2 = 100$

$$(3x - 1)^2 = 25$$

A correct next step in the solution of the problem is

1) $3x - 1 = \pm 5$
2) $3x - 1 = \pm 25$
3) $9x^2 - 1 = 25$
4) $9x^2 - 6x + 1 = 5$

7 What is the solution of the equation $2(x + 2)^2 - 4 = 28$?

1) 6, only
2) 2, only
3) 2 and –6
4) 6 and –2

Extra Practice

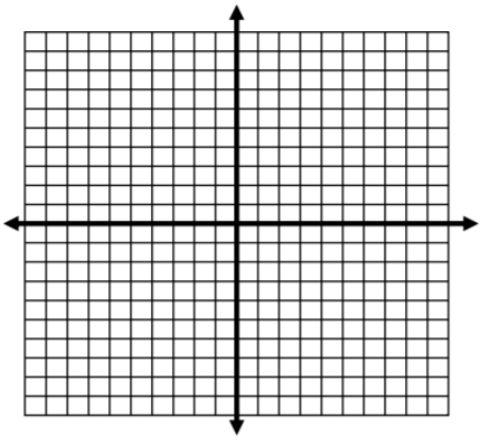
1. Find the roots: $f(x) = x^2 - 64$

2. Find the zeroes: $5x^2 = 35x$

3. Solve: $2x = 2x^2 - 60$

4. Find the zeroes: $-35 = x^2 - 12x$

5. Solve for the zeroes of $y = x^2 - 7x + 10$. Then, graph the equation.



What is the connection between the zeroes and what you see on the graph?

6. Tony makes a phone call at a pay phone. The charge is \$0.25 for placing the call and \$0.10 for each minute. Tony has \$2.10 in change in his pocket. Write an inequality that can be used to find *m*, the maximum number of minutes that Tony can talk on the phone.

Solve this inequality algebraically to find the maximum number of whole minutes he can talk on the phone.