

Name: Key

## Math 2 Review: Units 1-3

### Transformations

Type	Key Words	Rules
Translation	left, right, up, down (2, 3)	$(x, y) \rightarrow (x - 2, y)$ Left 2 $(x, y) \rightarrow (x + 5, y)$ Right 5 $(x, y) \rightarrow (x, y + 1)$ Up 1 $(x, y) \rightarrow (x, y - 3)$ Down 3
Reflection	x-axis, y-axis, $y=x$ , $y=-x$ (5, 9)	$(x, y) \rightarrow (x, -y)$ (x-axis) $(x, y) \rightarrow (-x, y)$ (y-axis) $(x, y) \rightarrow (y, x)$ ( $y=x$ ) $(x, y) \rightarrow (-y, -x)$ ( $y=-x$ )
Rotation	clockwise (-) clockwise (+) counter-clockwise 90, 180, 270, in either direction (-2, 3)	$(x, y) \rightarrow (-y, x)$ (90) $(x, y) \rightarrow (-x, -y)$ (180) (-180) $(x, y) \rightarrow (y, -x)$ (270) $(x, y) \rightarrow (-y, -x)$ (-90) $(x, y) \rightarrow (y, x)$ (-270)
Dilation	stretch/shrink (2, 1)	$(x, y) \rightarrow (5x, 5y)$ stretch by 5 $(x, y) \rightarrow (1/2x, 1/2y)$ shrink by 1/2

Isometry: same size and same shape [preimage & image are the same]

Compositions:

Ex1) Describe each algebraic rule by giving the two transformations it describes.

- $(x + 2, -y)$  Right 2, Reflect over x
- $2(-x, y)$  Dilate by 2, Reflect over y
- $1/3(y, -x)$  Dilate by 1/3, Rotate 90°
- $(-y + 6), x)$  Up 6, Rotate 270°



Ex2) Reflect the image on the right over the line, then rotate it clockwise 90°.

A.

B.

C.

D.



# Solving

## Quadratics

Square Root Method:	Factoring:	Quadratic Formula:	Imaginary:
If there is no "b" term! $2x^2 - 32 = 0$ $2x^2 = 32$ $\sqrt{x^2} = \sqrt{16}$ $x = 4$	If the factors of "a*c" can add to "b"! $2x^2 + x - 10 = 0$ $1 \mid -20$ $5 \quad -4 \mid 5 \quad -4$ $(x+5)(x-4) = 0$ $x = -5, 4$	Can be used all the time! $2x^2 - x = 8$ $2x^2 - x - 8 = 0$ $x = \frac{1 \pm \sqrt{(-1)^2 - 4(2)(-8)}}{2(2)}$ $x = \frac{1 \pm \sqrt{65}}{4}$	When there are no "real" solutions (doesn't touch the X-axis). $2x^2 - x = -8$ $2x^2 - x + 8 = 0$ $x = \frac{1 \pm \sqrt{(-1)^2 - 4(2)(8)}}{4}$ $x = \frac{1 \pm \sqrt{-63}}{4}$

\* neg under the radical

## Square Root Functions

Isolate the $\sqrt{\quad}$ and <u>Square</u> both sides:	
$\sqrt{x+2} = 6$ $x+2 = 36$ $x = 34$ check ✓	$3\sqrt{x} - 8 = 7$ $3\sqrt{x} = 15$ $(\sqrt{x})^2 = (5)^2$ $x = 25$ check ✓

## Rational Functions

Multiply by the Denominator, or Cross Multiply:	
$\frac{15}{x} = \frac{3}{2}$ $3x = 30$ $x = 10$ check ✓ $\frac{15\sqrt{3}}{10} = \frac{3}{2}$	$\frac{2x+3}{6} = \frac{3}{2}$ $18 = 2(2x+3)$ $18 = 4x+6$ $12 = 4x$ $x = 3$

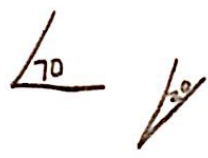
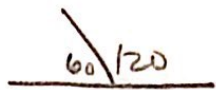
## Mixed Practice:

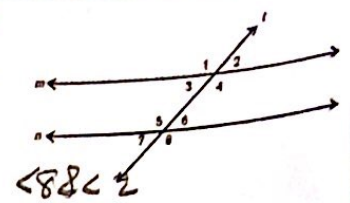
$\frac{x-2}{x} = \frac{x}{8}$ $x^2 = 8(x-2)$ $x^2 = 8x - 16$ $x^2 - 8x + 16 = 0$ $(x-4)(x-4) = 0$ $x = 4$	$\frac{4-2}{4} = \frac{4}{8}$ $\frac{2}{4} = \frac{4}{8}$ $\frac{1}{2} = \frac{1}{2}$
$\sqrt{4x-12} = x$ $4x - 12 = x^2$ $0 = x^2 - 4x + 12$ $(x-6)(x+2) = 0$ $x = 6 \quad x = -2$ check: x x	No solution



# Math 2 Review: Units 4-5

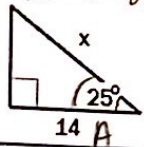
## Angles

Complementary	Supplementary	Transversals
Angles add up to: <u>90</u>	Angles add up to: <u>180</u>	Vertical pairs: $\angle 1$ & $\angle 4$
Picture: 	Picture: 	Linear pairs: $\angle 5$ & $\angle 7$
		Supplementary angles: $\angle 3$ & $\angle 5$
		Congruent angles: $\angle 1$ & $\angle 5$



\* Many other combos

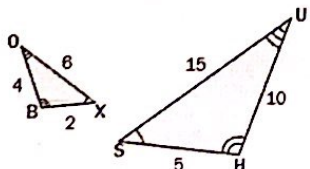
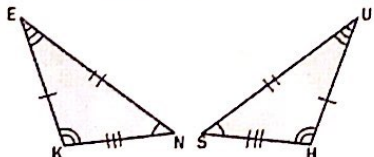
## Triangles

General Properties	Special Right Triangles
Angles: <u>theta (focus angle)</u>	30-60-90      45-45-90
Sides: <u>adjacent (touches B)</u>	$x - x\sqrt{3} - 2x$ $x - x - x\sqrt{2}$
<u>opposite (across from)</u>	
<u>Hypotenuse across from right angle.</u>	
Trigonometry	
Trig Functions:	Examples:
Use to find angles & sides.	If $\tan(y) = 7.115$ , then $y = 81.99$ or $82$ (INVERSE)
	$\cos(25) = \frac{14}{x}$ $x = 15.45$
Other Notes:	**Be sure to practice some more trig problems and remember SOH-CAH-TOA! There are some great problems online from the homework packets to re-work through.

Sum to 180

Sine  
Cosine  
tangent

## Comparing Figures : ORDER of parts matter for postulates

Similarity		
Example: $\triangle DBX \sim \triangle UHS$ ; Scale factor = <u>.4</u>	Postulates: AAS SSS SAS	Other Notes: **Be sure to look at the HW packets/ review guides from online! * congruent angles * proportional sides
		
Congruence		
Example: $\triangle EKN \cong \triangle UHS$ :	Postulates: SSS SAS ASA AAS HL	Other Notes: **Be sure to look at the HW packets/ review guides from online! * No road side assistance (AAA) * No donkeys (ASS or SSA) * congruent sides & angles
		

☆Be sure to study your proofs!



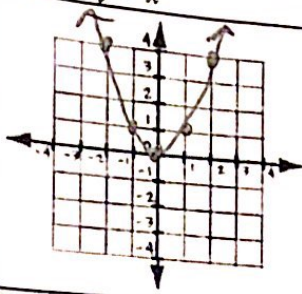
# Graphing

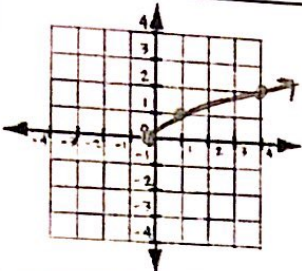
With x:

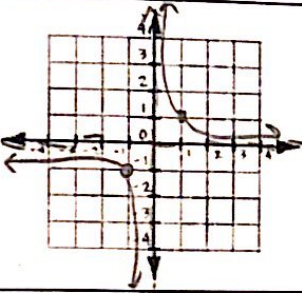
Left (+) Right (-)

At back (y):

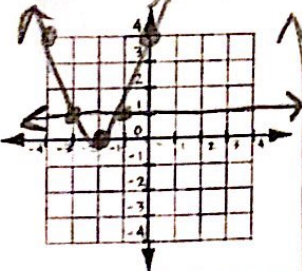
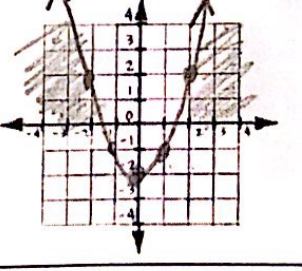
Up (+) Down (-)

Quadratics		
Parent: $y = x^2$	Transformations:	Other Notes:
	$y = -3(x+1)^2 - 2$ Reflect (x) stretch Left 1 Down 2 by 3	Writing equations in vertex form: Complete the square! Ex: $y = x^2 - 6x + 10 - 9$ $\downarrow$ $\frac{-b}{2} = \frac{-(-6)}{2} = 3 \rightarrow -3^2 = 9$ $y = (x-3)^2 + 1$ V: (3,1)

Square Root Functions		
Parent: $y = \sqrt{x}$	Transformations:	Other Notes:
	$y = \sqrt{x-5} + 1$ UP 1 Right +5	Pattern to follow from vertex. (After you finish go back to vertex.) over 1 UP 1. over 4, UP 2 over 9, UP 3.

Rational Functions		
Parent: $y = 1/x$	Transformations:	Other Notes:
	$y = \frac{1}{x+2} - 3$ Left +2, Down 3 HA: $y = -3$ VA: $x = -2$	HA: $y =$ number at back of num. (Keep sign) VA: $x =$ # in denom with x. (Take the opp)

## Systems and Inequalities

Systems	Quadratic Inequalities
Solving a system: <u>graph and find intersections</u> Ex: $y = 1$ and $y = (x+2)^2$	Solving: <u>first graph quadratic then look at sign to shade.</u> Ex: $y \leq x^2 - 2$
	

Solutions:  
 (-1, 1)  
 (-3, 1)

(Left 2)

Down 2

quadratics