



Activities for the Mathematics Classroom

Gregory Fisher, Mt. Tabor High School,
Winston-Salem NC, gfisher@wsfcs.k12.nc.us

<http://www.wsfcs.k12.nc.us/Domain/798>

Fred Thompson, East Forsyth High School
Kernersville NC, fgthompson@wsfcs.k12.nc.us

About Us

- Davidson College graduate many years ago (Mascot)
- Taught Middle School ESL in Japan, Middle School ESL in Korea, Middle School Japanese in Winston-Salem, High School Math in Mexico, Middle School Math in Brazil, and High School Science in Winston-Salem
- Currently Teaching Math 11 and Math 3 in H.S.
- NBCT and Burroughs Wellcome Fund Career Award in Science and Mathematics Teaching Award recipient

Amigo Bingo (I)

24	5	7	18	11
23	4	2	10	12
14	3	Free	1	13
15	16	17	9	20
22	6	8	19	21



Runner or Normal Bingo (2)

24	<input type="checkbox"/>	5	<input type="checkbox"/>	7	<input checked="" type="checkbox"/> A	18	<input type="checkbox"/>	11	<input type="checkbox"/>
23	<input type="checkbox"/>	4	<input type="checkbox"/>	2	<input type="checkbox"/>	10	<input type="checkbox"/>	12	<input type="checkbox"/>
14	<input type="checkbox"/>	3	<input type="checkbox"/>	Free	<input type="checkbox"/>	1	<input type="checkbox"/>	13	<input type="checkbox"/>
15	<input type="checkbox"/>	16	<input type="checkbox"/>	17	<input type="checkbox"/>	9	<input type="checkbox"/>	20	<input type="checkbox"/>
22	<input type="checkbox"/>	6	<input type="checkbox"/>	8	<input type="checkbox"/>	19	<input type="checkbox"/>	21	<input type="checkbox"/>

1: 32

7: 16

2: All Real Numbers

8: $3x + 2$

3: $y > 3$

9: $3(x + 2)$

4: 26

etc...

5: Octagon

29: $5x$

6: $180(n - 2)$

30: No solution

A. What is $(-4)^2$

B. Simplify $3x + 2x$

Four in a Row (5)

				X		
			O	O		

X?: What is $2 + 2$ X: 2 O: 4 O goes
 O?: What is $3 + 2$ X: 4 O: 5 O goes
 X?: What is $4 + 2$ X: 6 O: 6 X goes
 (x question)

		X				
	X	O				

With "gravity"

		X	O			
		X				

Without "gravity"



Bluff (6)

Geniuses

Cockroaches

Euclid

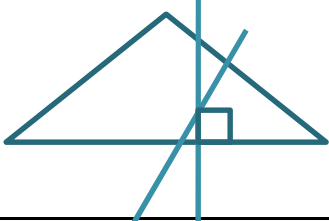



Pythagoras

Slap Jack (7)

Rules for SlapJack

- 1) First person to touch a correct rectangle gets 2 pts.**
- 2) Anyone touching an incorrect rectangle loses 1 pt.**
- 3) Anyone touching a correct rectangle on first try (but not the first to touch gets 1 pt.)**
- 4) Each group monitors themselves and determines the points per individual. Person with fewest letters in last name keeps score.**
- 5) No whining and no writing on the sheet!**

Y = $(1.056)^x$ A	Neither B	2 C	5% increase D	7 E	Y = $6(1.4)^x$ F
56 G	50% increase H	Growth I	$6(1.04)^x$ J	Decay K	30% decrease L
132 M	37% increase N	$6(.96)^x$ O	3% decrease P	3.7% increase Q	$Y = (1.56)^x$ R

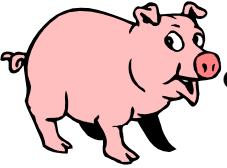
Median A	Altitude B	Perpendicular Bisector C	Angle Bisector D
Orthocenter E	Incenter F	Centroid G	Circumcenter H
Sometimes I	Always J	Never K	Inside the triangle L
Outside the triangle M	On hypotenuse N	On vertex of right triangle O	P 
Q 	R 	S 	

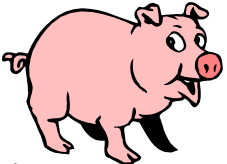




Grumble (8)


Complain for 75 seconds. If you can't think of anything to complain about then just say "Grumble."

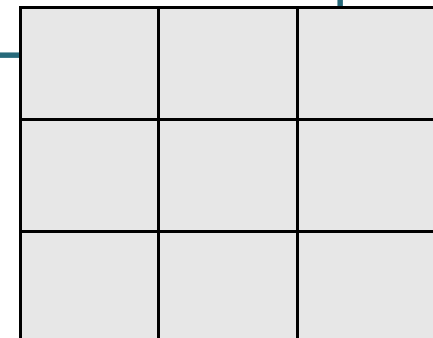
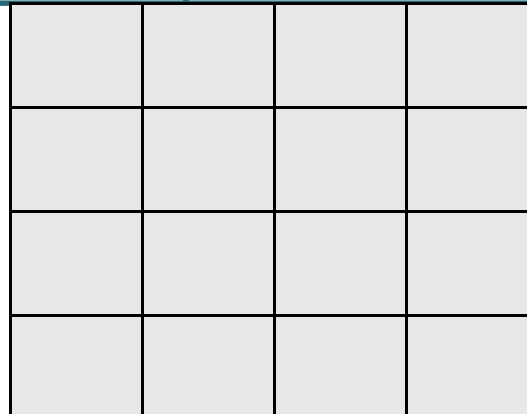
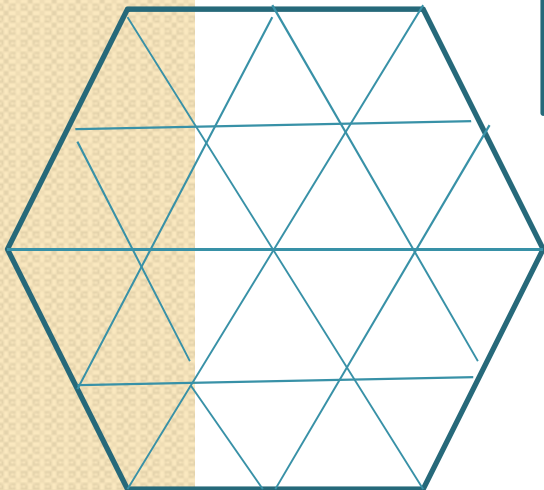
Puzzle (9)

$3+27$
 6
 $100+2$

 $95 + 6$

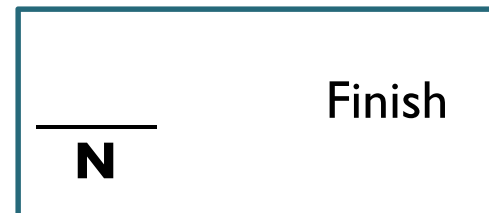
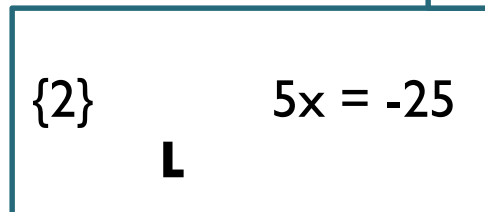
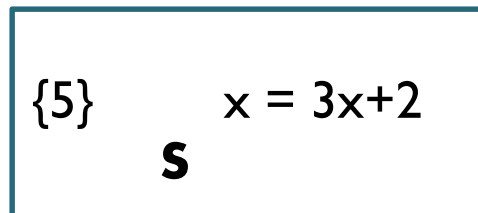
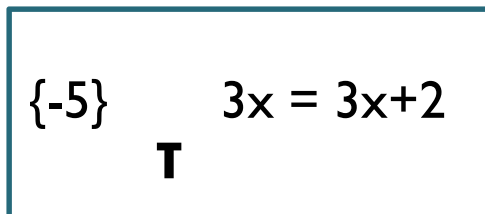
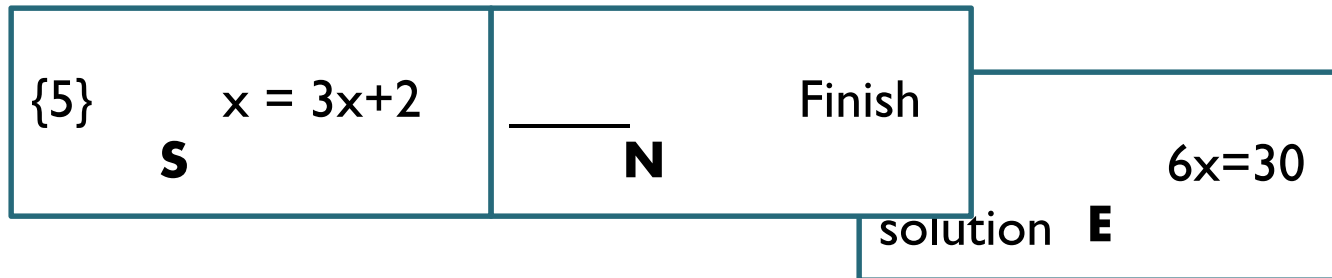
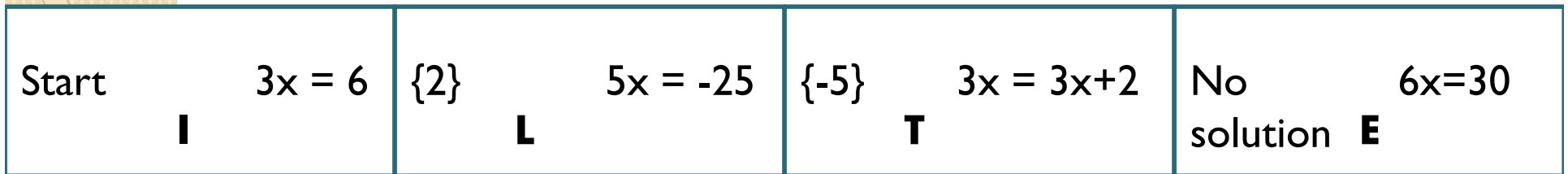
$3+27$ 6 $100+2$  $95 + 6$	7 12 $4+2$  $1 + 1$
101 10 $3+27$ $100 + 2$	2 $6 + 9$  $3+7$ $100+2$

$3+27$
 101
 $100+2$
 01

$3+7$
 2

 $100+2$



Dominoes (10) <Not the pizza>



Dominoes (10) <Not the pizza>

$$2x^{\frac{5}{2}}y^{\frac{1}{2}}$$

$$\mathbf{C} \sqrt[3]{27x^{12}y^5}$$

$$3x^4y^{\frac{5}{3}}$$

$$\mathbf{G} \sqrt{64x^2y^3}$$

$$\mathbf{L} \sqrt{9x^6y^4}$$

$$3x^3y^2$$

$$\mathbf{F} (16x^5y)^{\frac{1}{2}}$$

$$4x^{\frac{5}{2}}y^{\frac{1}{2}}$$

$$\mathbf{M} (8x^7y^2)^{\frac{1}{3}}$$

$$2x^{\frac{7}{3}}y^{\frac{2}{3}}$$

$$\mathbf{B} \sqrt[3]{64x^2y^3}$$

$$4x^{\frac{2}{3}}y$$

$$\mathbf{I} (9x^5y)^{\frac{1}{2}}$$

$$3x^{\frac{5}{2}}y^{-}$$

$$\mathbf{A} \sqrt[3]{8x^2y^7}$$

$$2x^{-}y^{\frac{7}{3}}$$

$$\mathbf{D} (9x^3y^7)^{\frac{1}{2}}$$

$$3x^{\frac{3}{2}}y^{\frac{7}{2}}$$

$$\mathbf{E} (64x^5y)^{\frac{1}{3}}$$

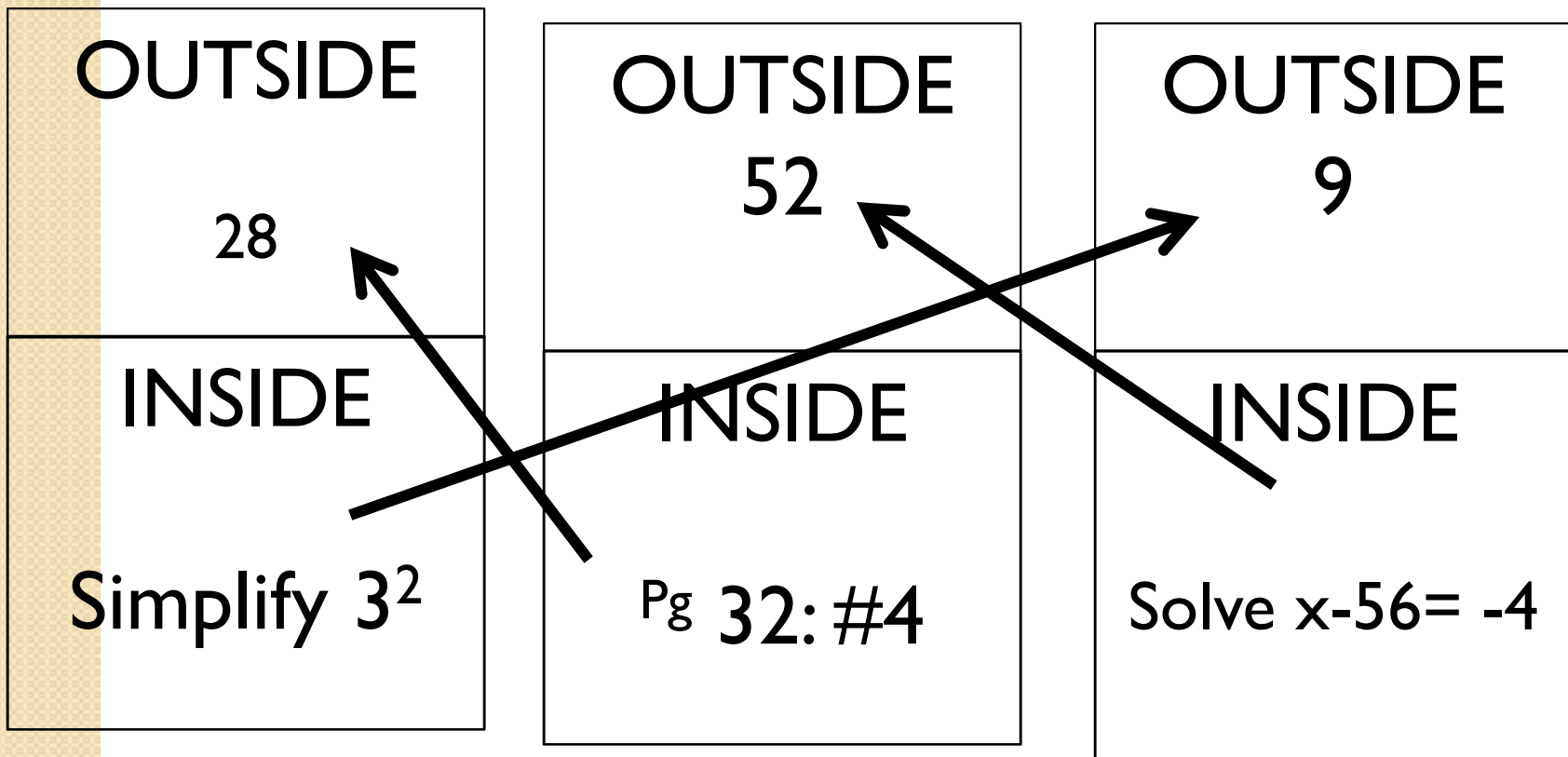
$$4x^{\frac{5}{3}}y^{\frac{1}{3}}$$

$$\mathbf{K} (27x^6y^9)^{\frac{1}{3}}$$

$$3x^2y^3$$

$$\mathbf{H} \sqrt{4x^5y}$$

Circuit (I I)



Matching Cards (12)

5^{-2}	$1/25$
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$$-25$$

-5^{-2}	$-1/25$
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$$1/25$$

-5^2	-25
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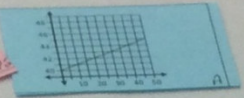
$$-1/25$$

Caleb's phone company charges a \$40 flat rate and \$0.10 per minute.

slope = 0.10
y-intercept = 40

NEXT = NOW + 0.10,
starting at 40

$y = 40 + 0.10x$



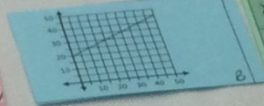
X	0	10	20	40
Y	40	41	42	

Ally's plant was 20 inches tall and grows 1 inch every 2 days.

slope = $\frac{1}{2}$
y-intercept = 20

NEXT = NOW + $\frac{1}{2}$,
starting at 20

$y = 20 + \frac{1}{2}x$



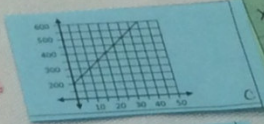
X	0	2	4	6
Y	20	21		23

Roman opened a savings account with \$200 and saves \$10 per month.

slope = 10
y-intercept = 200

NEXT = NOW + 10,
starting at 200

$y = 200 - 10x$

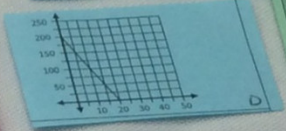


X	0	2	4	6
Y	200		240	260

Allen weighs 200 pounds but loses 10 pounds per month on his diet.

slope = -10
y-intercept = 200

$y = 200 - 10x$



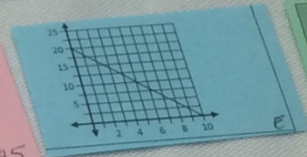
X	0		6	10
Y	200	160	140	100

Sabrina borrowed \$20 from her mom and pays her back \$2 each week.

slope = -2
y-intercept = 20

NEXT = NOW - 2,
starting at 20

$y = 20 - 2x$



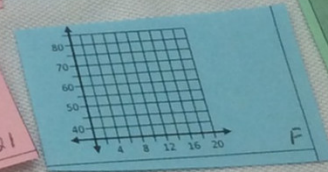
X	0	3	5	8
Y		14	10	4

Isaiah's job pays \$40 per day and \$3 for each sale that he makes.

slope = 3
y-intercept = 40

NEXT = NOW + 3,
starting at 40

$y = 40 + 3x$

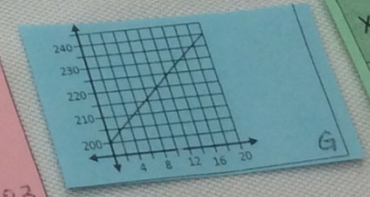


X		8	10	13
Y	55	64	70	79

slope = 2
y-intercept = 200

NEXT = NOW + 2,
starting at 200

$y = 200 + 2x$

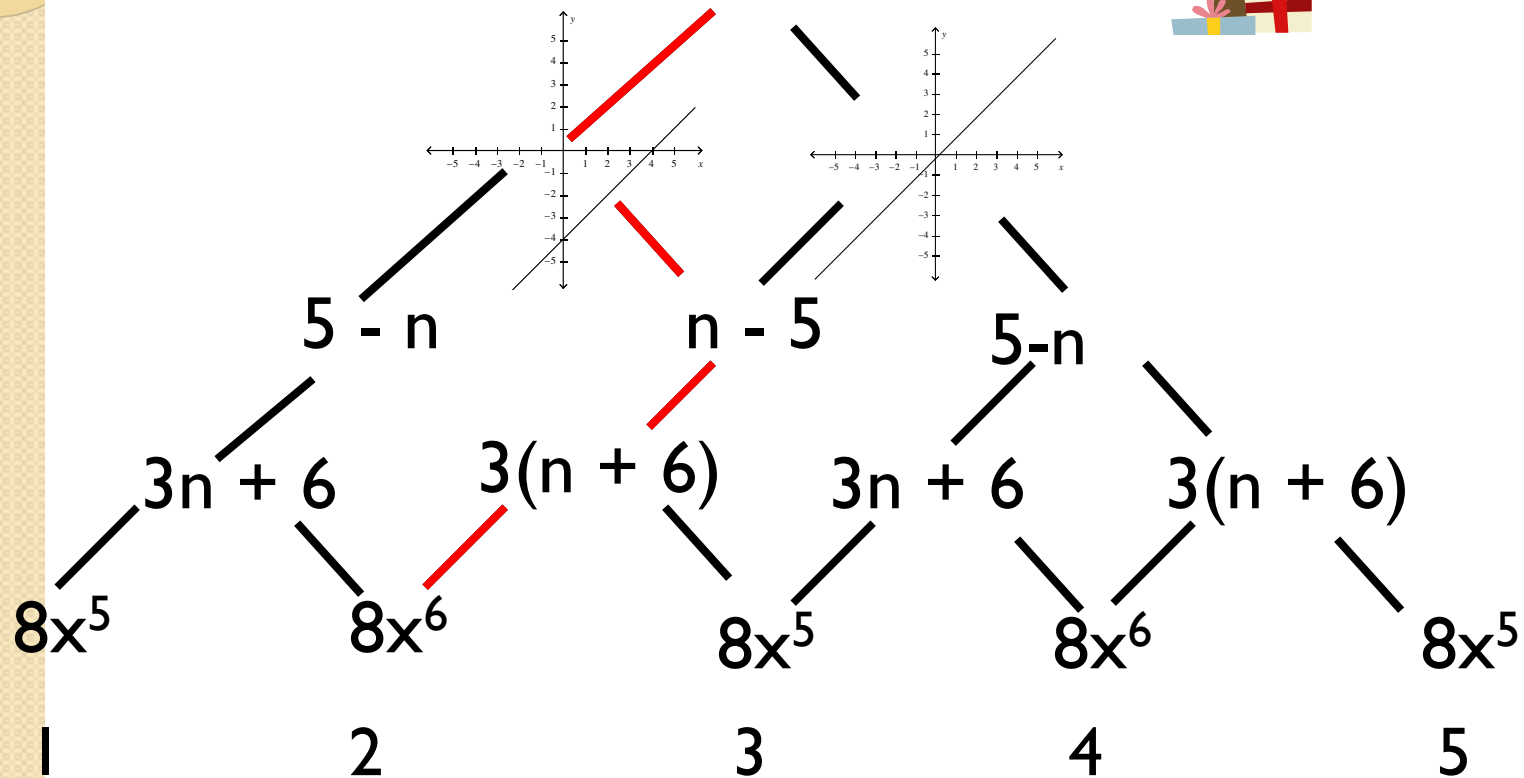


X	3	7
Y	206	214

Listening Tree (13)

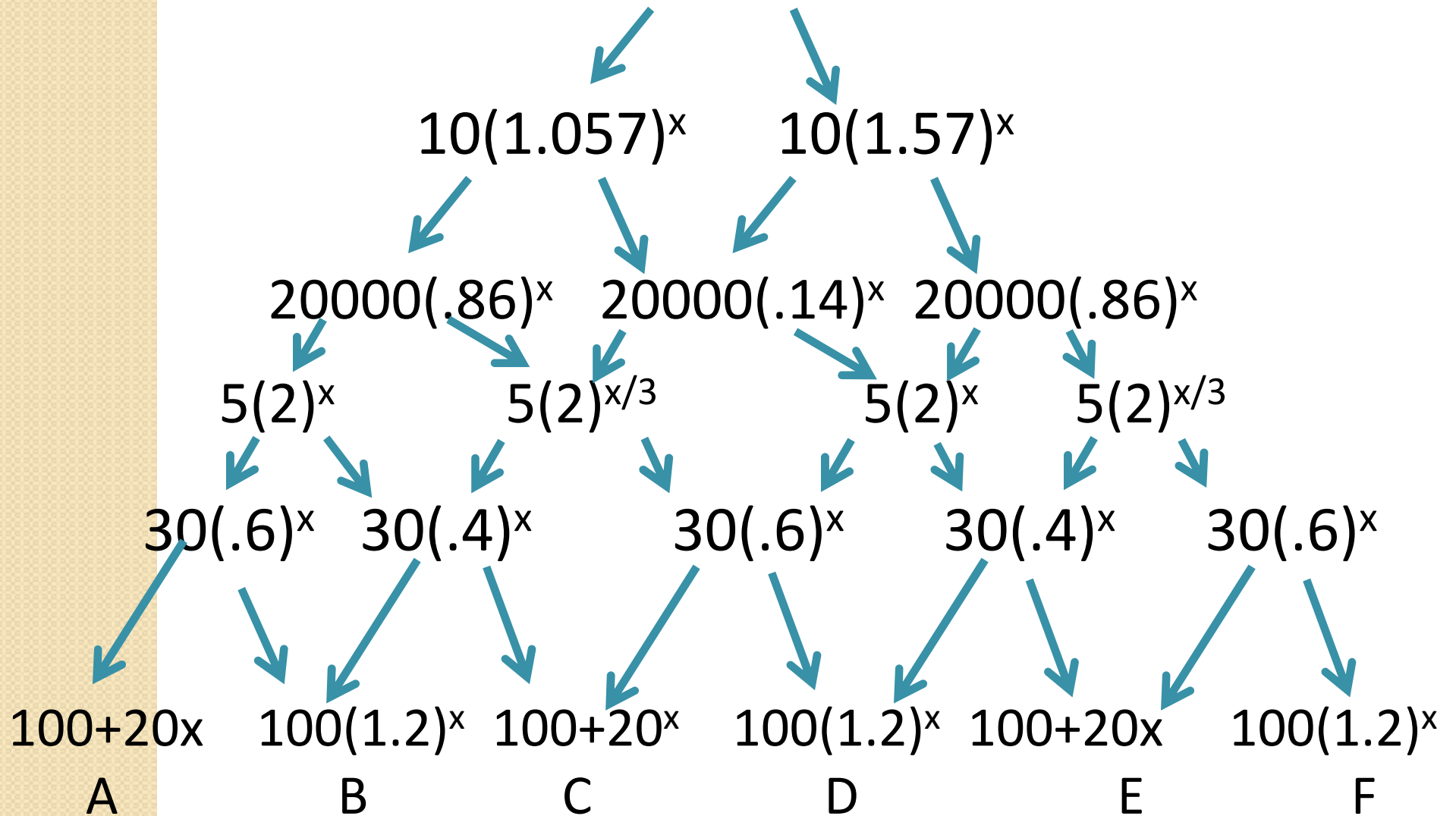


START



Listening Tree (I3)

START



Fisher Says (14)

If I say “Fisher Says” then model what I say
If I don’t say “Fisher Says” then “Freeze!!!”

$$y = x$$

$$y = 3$$

$$x = 3$$

$$y = x + 1$$

$$y = |x| + 1$$

$$y = -|x| + 1$$

$$y = x^2 + 1$$

End behavior of

$$y = -x^6 + 5x - 2$$

End behavior of

$$y = x^7 + 5x - 2$$

Vocabulary Recall (15)

You say your card and then someone else's card. Then that person says his card and then someone else's....

Fish

Sakana

Pig

Buta

Cat

Neko

Teacher

Sensei

Vocabulary Recall (15)

Pythagorean Theorem

$$a^2 + b^2 = c^2$$

Midpoint

$\frac{x_2 + x_1}{2}$ Enter divided by 2, $\frac{y_2 + y_1}{2}$ enter divided by 2

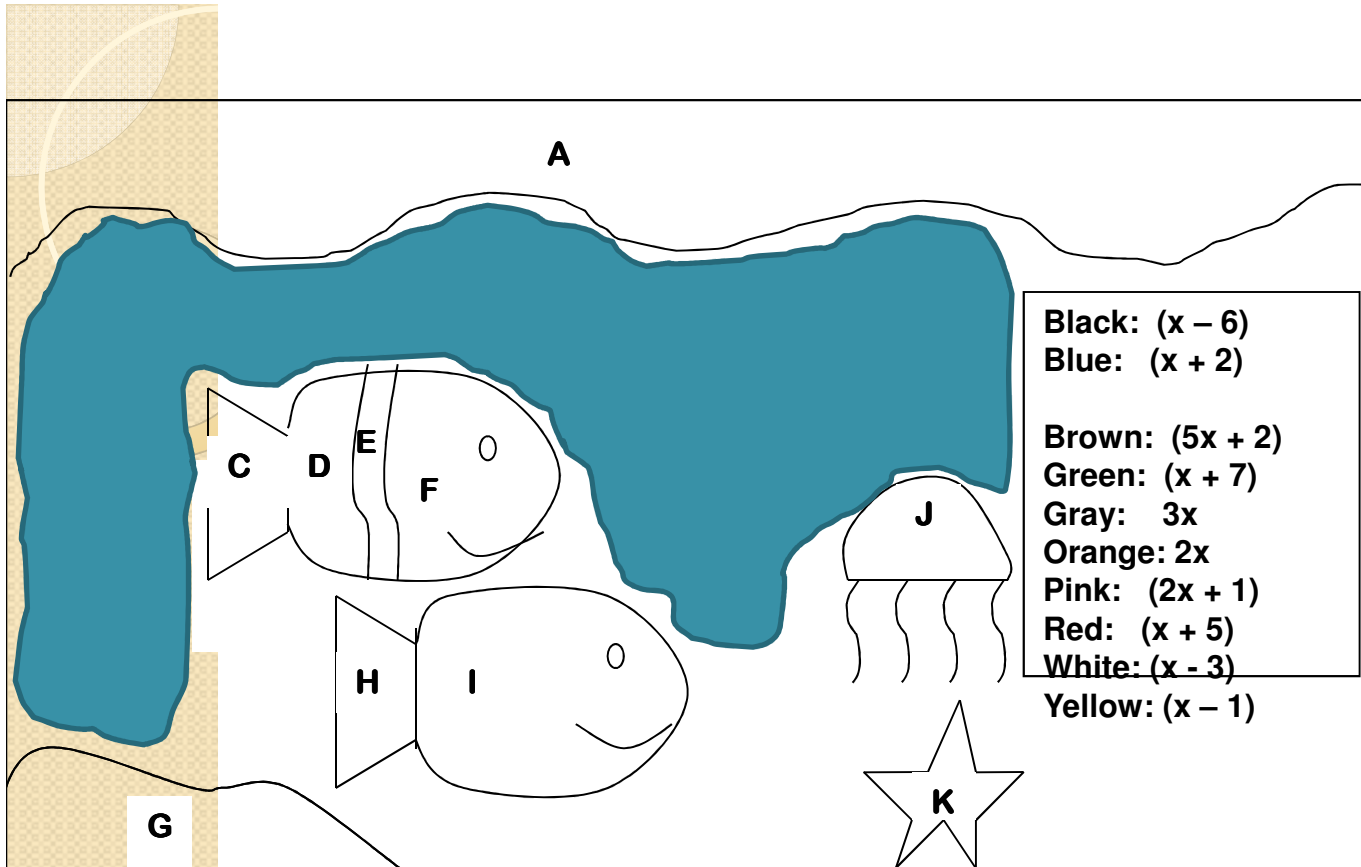
Vertex

Minimum or maximum of a parabola

Altitude

Segment perpendicular to opposite side from vertex





- Black: $(x - 6)$
- Blue: $(x + 2)$
- Brown: $(5x + 2)$
- Green: $(x + 7)$
- Gray: $3x$
- Orange: $2x$
- Pink: $(2x + 1)$
- Red: $(x + 5)$
- White: $(x - 3)$
- Yellow: $(x - 1)$

B	$x^2 + 6x + 8$	$(x + 4)(x + 2)$	Blue
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Color by Number (16)

Partner Activity (17)

Set 1A

1. $2x = 4$ 1. 2
2. $5x = -10$ 2. -2
3. $4x = 16$ 3. 4
4. $8x = -24$ 4. -3

I-C 2-D 3-A 4-B

Set 2A

- 5.
- 6.
- 7.
- 8.

Set 1B

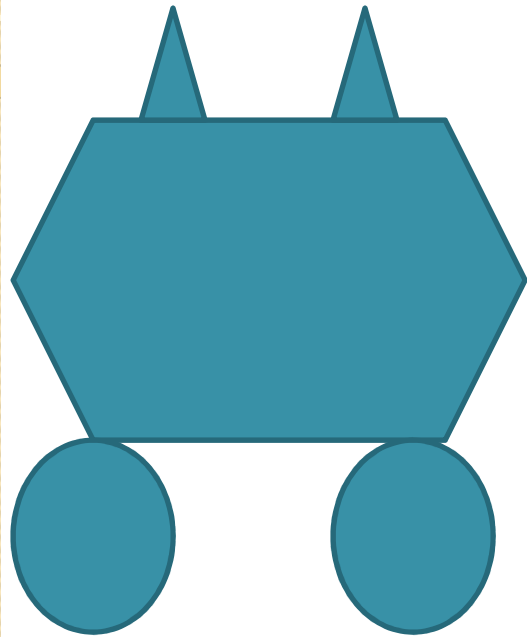
- A. $9x = 36$ A. 4
- B. $4x = -12$ B. -3
- C. $8x = 16$ C. 2
- D. $10x = -20$ D. -2

Set 2B

- I.
- J.
- K.
- L.

Examples on slope, exponents, and easy rational can be found in the handout

Describe the Picture (18)



Unlimited Problems (19)

Create problems (mult. and exponent power)
with solution of $15x^2y^3$

Example:

ANSWER: $15x^2y^3$ with mult. of variables & bonus for using the power rule of exponents

Group 1

- a) $5xy^3(3x)$ 0 pt (same)
- b) $3x(5y^3)(x)$ 1 pt
- c) $\frac{1}{2}(30x^2y^2)(y)$ 1 pt
- d) $3(5x)(y^3)$ -1 pt (incorrect)
- e) $(5xy)^2y$ 2 pts (bonus)
- f) $3*5*x*x*y*y*y$ 1 pt

Total 4pts

Group 2

- a) $15x^2*y^3$ 1 pt
- b) $5*3*x*y*y^2$ 1 pt
- c) $12 + 3x^2y^3$ -1 pt (incorrect)
- d) $5xy^3(3x)$ 0 pt (same)
- e) $3x^2y^3 + 12x^2y^3$ 0 pt

Total 1 pt

Partner Relay (20.5)

Left person: Solve for x : $x + 2 = 7$

Right Person: Solve for y : $2x - y = 8$

(x is what you get from your partner)

Left person: Solve for x : $3x + 4 = -11$

Right Person: Solve for y : $2x - y = 25$

(x is what you get from your partner)

Right person: Solve for x : $-3x + 4 = -20$

Left Person: Solve for y : $2x - 3y = 25$

(x is what you get from your partner)

Partner Relay (20.5) (One person is L(x) and the Other is R(x))

$$L(x) = -5x - 2$$

$$R(x) = x^2 - 6x + 7$$

$$\begin{aligned} L \circ R(3) &= L(R(3)) = L(3^2 - 6(3) + 7) \\ &= L(-2) = -5(-2) - 2 = 8 \end{aligned}$$

$$\begin{aligned} R(L(2)) &= R(-5(2) - 2) = R(-12) = \\ &(-12)^2 - 6(-12) + 7 = 223 \end{aligned}$$

$$\begin{aligned} L \circ R(x) \quad L(R(x)) &= L(x^2 - 6x + 7) \\ &= -5(x^2 - 6x + 7) - 2 \\ &= -5x^2 + 30x - 35 - 2 \\ &= -5x^2 + 30x - 37 \end{aligned}$$

Human Number Line (27)

Have the students arrange the cards (or themselves) from smallest to largest...

Example

$$-4^2 \quad (-4)^2 \quad \text{Log}_2 8 \quad \text{Log}_2 1/8$$


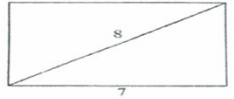
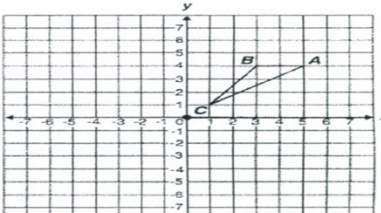
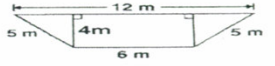
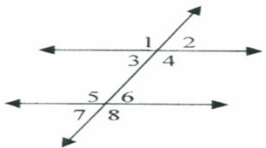
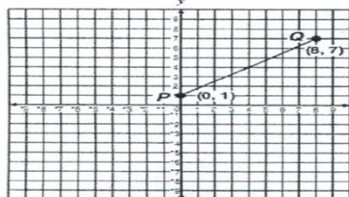
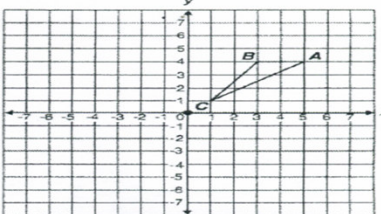

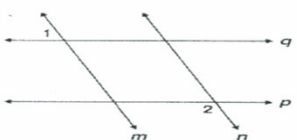
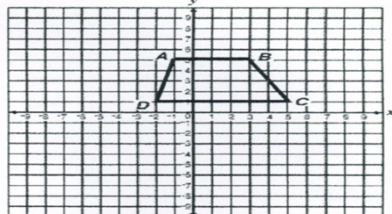

$$3.14 \quad \text{Pi} \quad i^2 \quad 7^0$$

$$1+1+1+1+1+1+1*0 \quad 4^{-2} \quad \text{Log}_3 0$$

$$\sqrt{16}$$

Give-one Take-one (28)

Give-One Get-One

Angle Relationships	Pythagorean Theorem	Transformations	Area of Figures
<p>1. What is $m\angle x$?</p> 	<p>2. What is the height of this rectangle?</p> 	<p>3. If triangle ABC is rotated 180 degrees about the origin, what are the coordinates of A'?</p> 	<p>4. What is the area, in square meters (m), of the trapezoid shown below?</p> 
<p>5. Name the angle relationships.</p>  <p>$\angle 1$ & $\angle 2$ $\angle 5$ & $\angle 8$ $\angle 5$ & $\angle 4$ $\angle 8$ & $\angle 4$</p>	<p>6. What is the length of line segment PQ shown below?</p> 	<p>7. Reflect triangle ABC across the x-axis.</p> 	<p>8. What is the area of the figure?</p> 
<p>9. Given: $p \parallel q$; $m \parallel n$; $m\angle 1 = 75^\circ$</p>  <p>What is $m\angle 2$?</p> <p>A 15° B 75° C 90° D 105°</p>	<p>10. A right triangle's hypotenuse has length 5. If one leg has length 2, what is the length of the other leg?</p> <p>A 3 B $\sqrt{21}$ C $\sqrt{29}$ D 7</p>	<p>11. Trapezoid $ABCD$ below is to be translated to trapezoid $A'B'C'D'$ by the following motion rule.</p> <p>$(x, y) \rightarrow (x + 3, y - 4)$</p>  <p>What will be the coordinates of vertex C'?</p> <p>A $(1, -3)$ B $(2, 1)$ C $(6, 1)$ D $(8, -3)$</p>	<p>12. The rectangle shown below has length 20 meters and width 10 meters.</p>  <p>If four triangles are removed from the rectangle as shown, what will be the area of the remaining figure?</p> <p>A 136 m^2 B 144 m^2 C 168 m^2 D 184 m^2</p>



Two Truths and a Fib (26)

- 1) The product of a rational number and an irrational number is sometimes rational.
- 2) Lines are sometimes functions.
- 3) X^2 is always greater than x .

Students can do this with groups creating three problems...

Residuals (Not in packet)

Name	Guessed Age	Actual Age	Residual or Percent of Error Predicted-Actual
1. Miley Cyrus		21	
2. President Obama		53	
3. Leonardo DiCaprio		40	
4. Kim Kadashian		33	
5. Queen of England		88	
		Total:	

Songs:

Exponents (Sung to “Flintstones”)

Exponents, meet the exponents, they're a common Algebra family

When you multiply them, you add the exponents

When you subtract them, you divide the exponents

When you raise one to a power, you multiply the exponents

When you have a negative one, you flip the location

When you have a fraction, the denominator is a root

Let's see when the exponent is zero then you make the denominator 1

Exponents, use them correctly, use them correctly, and you'll get an A!!!!!!!

Factoring Binomials (Sung to "If you are happy and you know, clap your hands")

$$(+ \quad +) = (+)(+) \quad (- \quad +) = (-)(-)$$

If the second is a plus, two of the first.

If the second is a plus, two of the first.

If the second is a plus, then you add to get the middle

If the second is a plus, two of the first

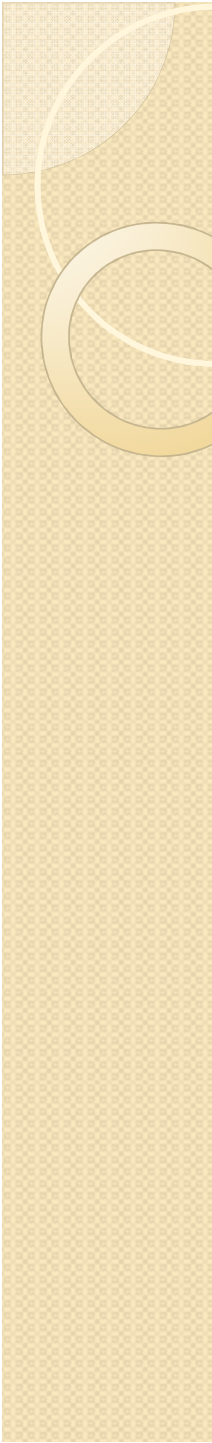
$$(+ \quad -) = (+)(-)$$

If the second is a minus, one of each

If the second is a minus, one of each

If the second is a minus, then you subtract to get the middle

If the second is a minus, one of each.



Logs (Sung to Jingle Bells)

Adding logs, adding logs, multiply them
A number in front of the log becomes the exponent.


Minus logs, minus logs, divide them
Log of 1 is zero, and can't take log of negative.

Shifting Graph (Sung to “We wish you a Merry Christmas”)

A plus in the middle moves it left
A plus in the middle moves it left
A minus in the middle moves it right
That's how you move horizontally

A plus on the outside moves it up
A plus on the outside moves it up
A minus on the outside moves it down
That's how you move vertically

A number more than one makes it thin
A number less than one makes fat
A negative flips it upside down
That's how you change the shape



Project Ideas (go to website for details)

Dodecahedron Collage

Graphing Project

Water Fountain

Model Home



Odds and Ends

- Please fill out the evaluation!!!