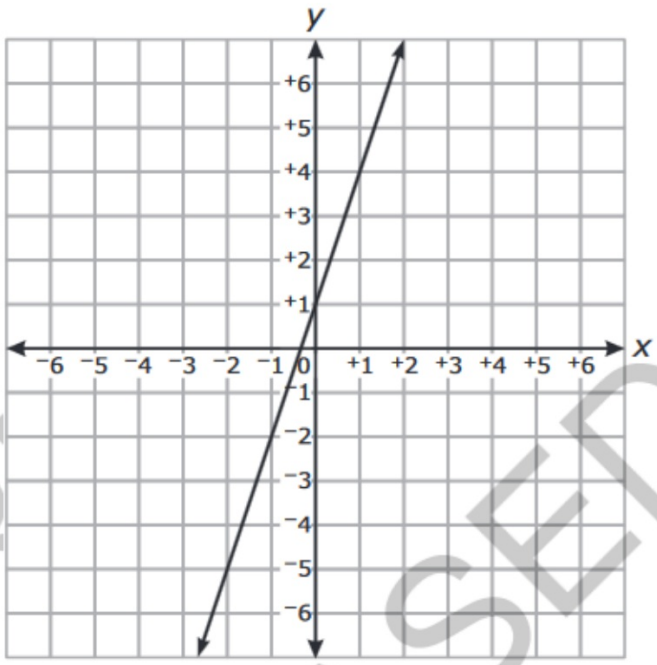
Warm-up April 19th No Calculators

1) Which choice is a correct equation for the line graphed below?



A $y = 3x + 1$

B $y = 2x + 1$

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

D $y = \frac{1}{3}x + 1$

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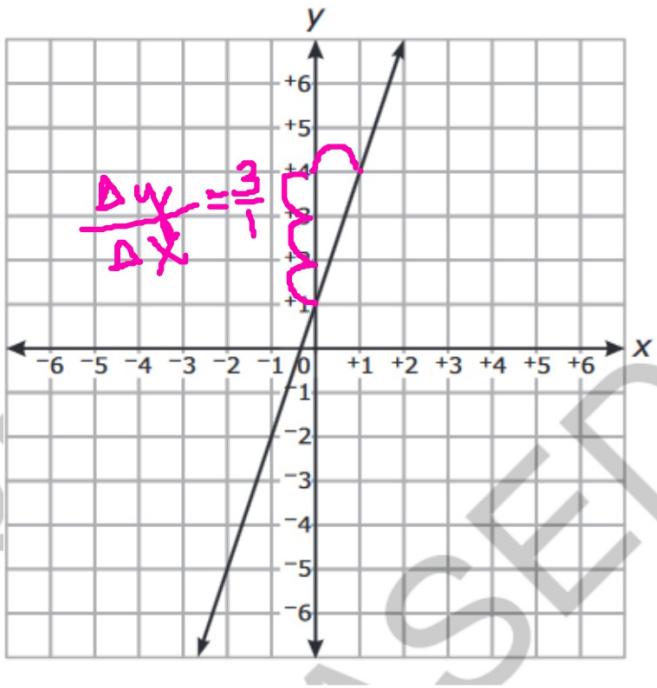

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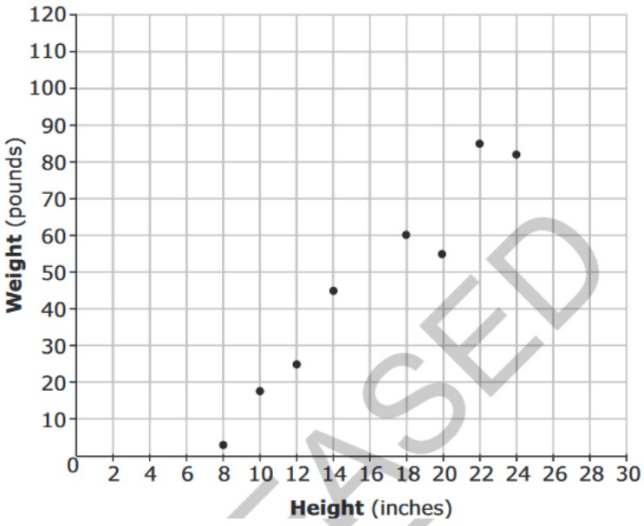
2) Sharon made a scatterplot comparing the shoulder heights of dogs to their weights.



Sharon's dog has a shoulder height of 28 inches. Using a linear model, which is the ***best*** prediction of her dog's weight?

A 85 pounds

B 90 pounds

C 105 pounds

D 120 pounds

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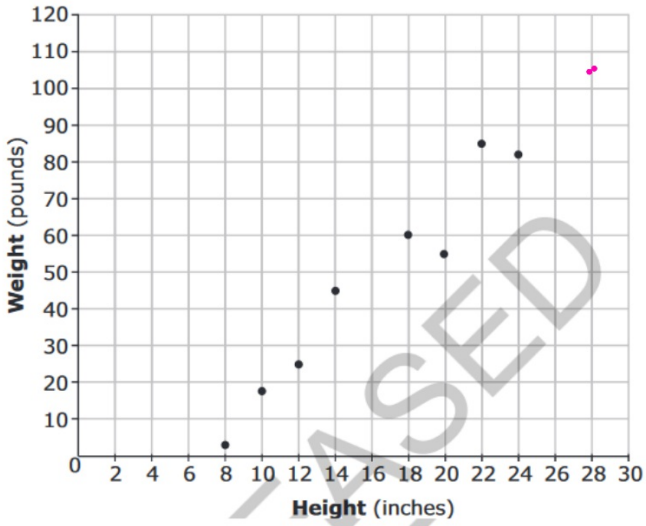

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3) What is the value of $0.\overline{36} \bullet \frac{11}{2}$?

4) What is the sum of all the integers between $\sqrt{19}$ and $\sqrt{77}$?

5) On a number line, let point *P* represent the largest integer value that is less thar $\sqrt{407}$. Let point *Q* represent the largest integer value that is less than $\sqrt{68}$. Wha is the distance between *P* and *Q*?

3) What is the value of $0.\overline{36} \cdot \frac{11}{2}$? 2

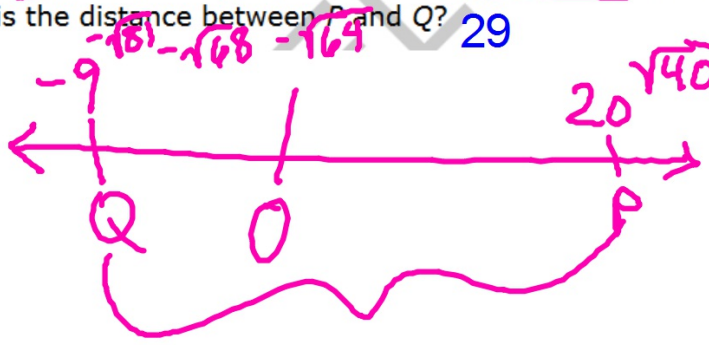
$\frac{36}{99} \cdot \frac{11}{2} = \frac{18}{9} = 2$

4) What is the sum of all the integers between $\sqrt{19}$ and $\sqrt{77}$? 26

$\sqrt{25}, \sqrt{36}, \sqrt{49}, \sqrt{64}$

$5+6+7+8=26$

5) On a number line, let point P represent the largest integer value that is less than $\sqrt{407}$. Let point Q represent the largest integer value that is less than $-\sqrt{68}$. What is the distance between P and Q? 29



$\sqrt{400}$ $\sqrt{407}$ $-\sqrt{64}$ $-\sqrt{68}$ $-\sqrt{81}$

8 -9

1. **PRODUCT RULE:** To multiply when two bases are the same, write the base and ADD the exponents.

$$x^m \cdot x^n = x^{m+n}$$

Examples:

A. $x^3 \cdot x^8 = x^{11}$

B. $2^4 \cdot 2^2 = 2^6$

C. $(x^2y)(x^3y^4) = x^5y^5$

Same base and multiplying, add the exponents

. **QUOTIENT RULE:** To divide when two bases are the same, write the base and SUBTRACT the exponents.

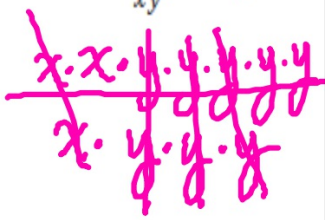
$$\frac{x^m}{x^n} = x^{m-n}$$

Examples:

A. $\frac{x^5}{x^2} = x^3$

B. $\frac{3^5}{3^3} = 3^2$

C. $\frac{x^2y^5}{xy^3} = xy^2$



Same base and dividing, subtract the exponents

3. **ZERO EXPONENT RULE:** Any base (except 0) raised to the zero power is equal to one.

$$x^0 = 1$$

Examples:

A. $y^0 = 1$ B. $6^0 = 1$ C. $(7a^3b^{-1})^0 = 1$

$2x^0 = 2(1) = 2$

Any base to the zero power is 1!

4. **POWER RULE:** To raise a power to another power, write the base and MULTIPLY the exponents.

$$(x^m)^n = x^{m \cdot n}$$

Examples:

A. $(x^3)^2 = x^6$

B. $(3^2)^4 = 3^8$

C. $(z^5)^2 = z^{10}$

Power to a power you multiply the exponents

5. EXPANDED POWER RULE:

$$(xy)^m = x^m y^n \qquad \left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$$

Examples:

A. $(2a)^3 = 2^3 a^3 = 8a^3$

B. $(6x^3)^2 = 6^2(x^3)^2 = 36x^6$

C. $\left(\frac{x^2}{y}\right)^4 = \frac{(x^2)^4}{y^4} = \frac{x^8}{y^4}$

D. $\left(\frac{2x}{3y^2}\right)^3 = \frac{(2x)^3}{(3y^2)^3} = \frac{2^3x^3}{3^3(y^2)^3} = \frac{8x^3}{27y^6}$

Distribute the exponent to each part of the base

6. NEGATIVE EXPONENTS: If a factor in the numerator or denominator is moved across the fraction bar, the sign of the exponent is changed.

$$x^{-m} = \frac{1}{x^m} \qquad \frac{1}{x^{-m}} = x^m \qquad \left(\frac{x}{y}\right)^{-n} = \left(\frac{y}{x}\right)^n$$

Examples:

A. $x^{-3} = \frac{1}{x^3}$

B. $4^{-2} = \frac{1}{4^2} = \frac{1}{16}$

C. $-4x^5y^{-2} = \frac{-4x^5}{y^2}$

D. $\left(\frac{x^2}{y}\right)^{-3} = \left(\frac{y}{x^2}\right)^3 = \frac{y^3}{x^6}$

E. $(3x^{-2}y)(-2xy^{-3}) = -6x^{-1}y^{-2} = \frac{-6}{xy^2}$

F. $\frac{a^{-2}b^3}{c^{-4}d^{-1}} = \frac{b^3c^4d}{a^2}$

G. $(-2x^2y^{-4})^{-2} = \left(\frac{-2x^2}{y^4}\right)^{-2} = \left(\frac{y^4}{-2x^2}\right)^2 = \frac{y^8}{4x^4}$

CAUTION: $-x \neq \frac{1}{x}$ For example: $-3 \neq \frac{1}{3}$

To make negative exponents positive, you change the position of the base. If base is in numerator, move to the denominator and make the exponent positive. If base is in the denominator, move to the numerator and make the exponent positive.

REMEMBER: An exponent applies to only the factor it is directly next to *unless* parentheses enclose other factors.

Examples:

A. $(-3)^2 = (-3)(-3) = 9$

B. $-3^2 = -9$

Classwork/Homework:

Get with your assigned partner and work on the worksheet posted on-line.

Come and check your answers after each 8 problems.

What you do not finish is for your homework along with EOG Packet 10 - 14