

CAHSEE Notes – Number Sense

<p><u>Integers</u></p> <p>$-3 + 7 =$</p> <p>$5 - 9 =$</p> <p>$-2 - (-6) =$</p> <p>$-3(7) =$</p> <p>$-30 \div -10 =$</p>	<p><u>Order of Operations</u></p> <p><u>P</u>arentheses $-2 - 10 \div 5 \times 3 + 6$</p> <p><u>E</u>xponents</p> <p><u>M</u>ultiply/<u>D</u>ivide (Left to Right)</p> <p><u>A</u>dd/<u>S</u>ubtract (Left to Right)</p>
<p><u>Scientific Notation</u></p> <p>$7.34 \times 10^{-5} =$</p> <p>$836,000,000 =$</p>	<p><u>Simplifying Fractions</u></p> <p>$\frac{30}{36} =$</p>
<p><u>Adding/Subtracting Fractions</u></p> <p>$\frac{2}{3} + 3\frac{1}{2} =$</p>	<p><u>Prime Factorization of Denominators(LCD)</u></p> <p>$\frac{3}{10} + \frac{5}{12}$</p>
<p><u>Multiplying/Dividing Fractions</u></p> <p>$2\frac{2}{3} \times \frac{6}{10} =$</p> <p>$\frac{3}{2} \div \frac{1}{4} =$</p>	<p><u>Adding/Subtracting Decimals</u></p> <p>1) $3.18 + 41.3 + 0.142$ 2) $14.7 - 3.68$</p>
<p><u>Multiplying Decimals</u></p> <p>$32.1 \times 0.26 =$</p>	<p><u>Dividing Decimals</u></p> <p>$25.63 \div 1.2 =$</p>

<p><u>Percent to Fraction</u></p> <p>32% =</p>	<p><u>Fraction to Percent</u></p> <p>$\frac{3}{8} =$</p>
<p><u>Percent Word Problems</u></p> <p>Original price of a DVD: \$20</p> <p>1) Tax: 6% 2) Discount: 6%</p>	<p><u>Simple Interest</u></p> <p>\$90 at 3% for 5 years.</p>
<p><u>Percent Increase/Decrease</u> $\frac{\text{Change}}{\text{Original}}$</p> <p>From 120 pounds to 100 pounds.</p>	<p><u>Negative Exponents</u> $a^{-n} = \frac{1}{a^n}$</p> <p>$5^{-2} =$</p>
<p><u>Multiplying Exponents</u> $a^m \cdot a^n = a^{m+n}$</p> <p>$x^3 \cdot x^4 =$</p>	<p><u>Dividing Exponents</u> $\frac{a^m}{a^n} = a^{m-n}$</p> <p>$\frac{x^2}{x^6} =$</p>
<p><u>Powering Exponents</u></p> <p>$(a^m)^n = a^{m \cdot n}$</p> <p>$(x^2)^3 =$</p>	<p><u>Square Roots</u></p> <p>$\sqrt{70}$ is between what two numbers?</p>
<p><u>Absolute Value</u></p> <p>$-9 =$</p> <p>$9 =$</p> <p>$x = 4$</p>	<p>$\sqrt{\quad} = 1$ $\sqrt{\quad} = 7$</p> <p>$\sqrt{\quad} = 2$ $\sqrt{\quad} = 8$</p> <p>$\sqrt{\quad} = 3$ $\sqrt{\quad} = 9$</p> <p>$\sqrt{\quad} = 4$ $\sqrt{\quad} = 10$</p> <p>$\sqrt{\quad} = 5$ $\sqrt{\quad} = 11$</p> <p>$\sqrt{\quad} = 6$ $\sqrt{\quad} = 12$</p>

Algebra & Functions

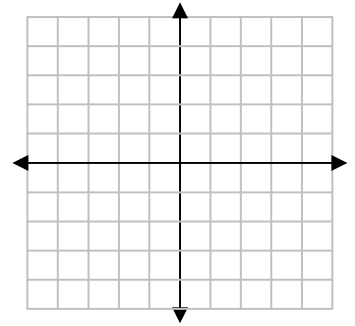
<p>Less than:</p> <p>Less than or equal to:</p> <p>Greater than:</p> <p>Greater than or equal to:</p>	<p>Sum:</p> <p>Difference:</p> <p>Product:</p> <p>Quotient:</p>
<p><u>Writing Equations & Inequalities</u></p> <p>1) 3 less than five times a number is greater than 8.</p> <p>2) The product of 4 and the quantity of x and 7 is 32.</p> <p>3) 7 is less than or equal to 8 more than a number.</p>	<p><u>Evaluating Expressions</u></p> <p>$x - 2(y - 1)^2 + 4$, when $x = -7$ and $y = -2$</p>
<p><u>Multiplying Exponents</u> $a^m \cdot a^n = a^{m+n}$</p> <p>$(3x^{-4}y^3)(5xy^2)$</p>	<p><u>Dividing Exponents</u> $\frac{a^m}{a^n} = a^{m-n}$</p> <p>$\frac{2x^4y^{-2}z^{-5}}{12x^4y^3}$</p>
<p><u>Powering Exponents</u> $(a^m)^n = a^{m \cdot n}$</p> <p>$(-2x^2y^{-4})^3$</p>	<p><u>Roots</u></p> <p>$\sqrt{25x^6y^4}$</p>

Quadratics vs Cubic Graphs

Slope

$$m = \frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1}$$

(2,-3) and (-1,3)



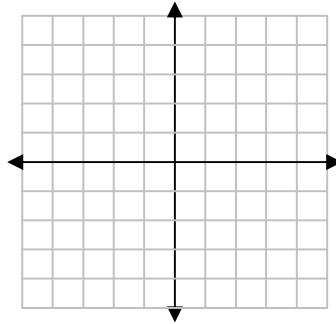
Graphing by Slope-Intercept Form

$$y = mx + b$$

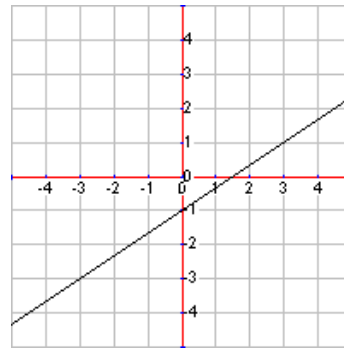
m =

b =

$$y = -3x + 2$$



Writing an Equation from a Graph



Solving Two-Step Equations

$$3x - 5 = 13$$

Solving Two-Step Inequalities

$$2 - \frac{x}{4} > -3$$

Writing & Solving Rate Equations

Carlos ran 3 miles in 20 minutes. If he ran this rate tomorrow, how long would it take him to run 5 miles?

Measurement & Geometry

Scale Drawings

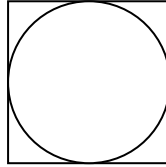
A model car has a scale of 4 in = 3 ft.
If the model car is 28 in long,
then how long is the real car?

Area & Perimeter Perimeter: Add up the lengths of all the sides. Area: Number of square units inside a shape.

Rectangle: $A = b \cdot h$

Trapezoid: $A = \frac{h(b_1 + b_2)}{2}$

1) Find the area of the shaded region.



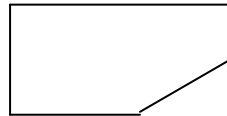
Triangle: $A = \frac{b \cdot h}{2}$

Circle: $A = \pi r^2$

2) Find the area.

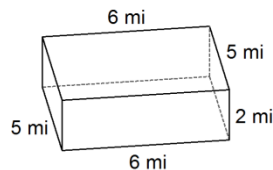
Parallelogram: $A = b \cdot h$

Circumference: $C = d\pi$



Surface Area

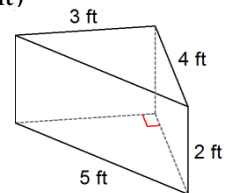
Surface Area = Sum of the area of all the Faces



Volume

Volume: Number of cubic units inside an object.

Volume = (Area of the Base) x (Height)



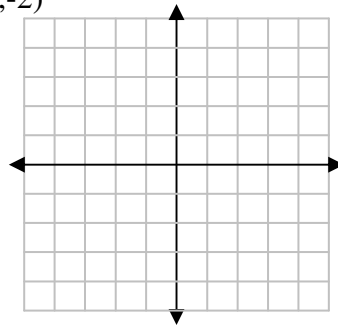
Area Using Coordinate Plane

Plot $(-3,4), (-3,-2), (4,4), (4,-2)$

a) What is the shape?

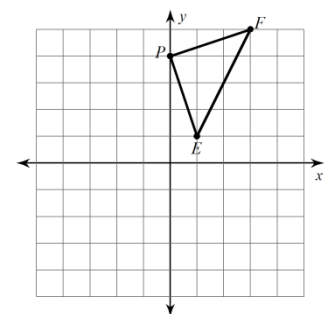
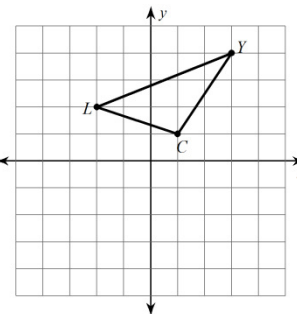
b) What is the Perimeter?

c) What is the Area?



Transformations

translation: 1 unit right and 3 units down reflection across the x-axis

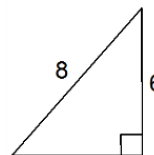
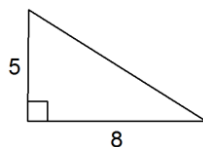


Pythagorean Theorem

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

1) Find the missing side.

2) Find the missing side.



Algebra

Opposite and Reciprocal

- 1) Opposite of -6
- 2) Reciprocal of $\frac{2}{3}$
- 3) Opposite of $\frac{4}{5}$
- 4) Reciprocal of -7

Absolute Value Equations & Inequalities

Which values are solutions?

- 1) $|x - 3| = 7$ 2) $|3 - 2x| > 5$
- $\{-4, 4, 7, 10\}$ $\{-4, 0, 4, 6\}$

Solving Multi-Step Equations & Inequalities

- 1) $3x - 2(x - 5) = 6$ 2) $5(2 - x) > 3 - (x - 5)$

Finding x and y-intercepts

$2x - 6y = 10$
x-intercept:

y-intercept:

Verifying Points on a Line

- $y = 3x - 2$
- 1. (2,4) 2. (0,2)

 - 3. (-3,4) 4. (-1,-5)

Parallel Lines

Which lines are parallel?
1) $3x - 4y = 8$ 2) $x - 3y = 9$ 3) $4y - 3x = 4$

Systems of Equations

Which is a solution to the system of equations?
 $y = 2x - 5$ and $3x - y = 6$

- 1. (0,3) 2. (-1,-7) 3. (1,-3)

Polynomial Operations

- 1) $(3x^2 - 2x + 1) - (x^2 + 5x - 6)$

- 2) $(2x + 1)(x - 3)$