Practice for #1 from Benchmark Assessment

1. You are going on a trip to the Natural History Museum. At 9:00 AM, you leave for the museum, which is 120 miles away. At 10:15 AM, you are 63 miles away from the museum.

   - Write a linear equation in point-slope form and slope-intercept form that gives the distance, d, (in miles) from the museum in terms of the time, t (in minutes). Let t represent the number of minutes since 9:00 AM.

   - Graph the function with the vertical axis representing distance from the museum and the horizontal axis representing time.
   - Find the distance you are from the museum after you have traveled 2 hours.

   - About what time will you be at the museum?

2. You are running a 10-kilometer race. At 8:00 A.M., you start the race. At 8:30 A.M., you are 4 kilometers from the finish line.
   a. Write a linear model that gives the distance *d* (in kilometers) from the starting line in terms of the time *t* (in minutes). Let *t* represent the number of minutes since 8:00 A.M.

   b. Predict your time to finish the race.

3. A mountain climber is scaling a 300-foot cliff at a constant rate. The climber starts at the bottom at 12:00 P.M. By 12:30 P.M., the climber has moved 62 feet up the cliff.
   a. Write an equation that gives the distance *d* (in feet) remaining in the climb in terms of the time *t* (in hours). What is the slope of the line?
   b. At what time will the mountain climber reach the top of the cliff?

Practice for #2 from Benchmark Assessment

a. $\frac{x-1}{3}-\frac{x+8}{4}=-2$

b. $\frac{2n}{7}-\frac{3n-3}{9}=1$

c. $\frac{6x+5}{5}-\frac{8x-2}{2}=-12$

d. $\frac{8x}{3}+\frac{3x-1}{5}=\frac{4x+2}{2}+\frac{5x-5}{4}$

e. $4m-\frac{6m+1}{7}=\frac{9m+3}{3}$

Practice for #3 from Benchmark Assessment

Solve the equation or inequality.

a. $|5+x|\le 6$

b. $|3x-3|+4\ge 10$

Practice for #4 from Benchmark Assessment

1) Write an equation of a line through the given points.
   a. (5, -4), (0, 2)
   b. (-1, 0), (-3, -1)
   c. (2, 7), (-8, 4)
2) Write an equation of the line that passes through the point (-3, 2) and has the given slope m = $\frac{1}{3}$.

3) Find an equation of the line that passes through the point (3, 4) and has the given slope m = 0. Then right an equation for a line perpendicular to it, that passes through point (-2, 4)

4) Find an equation of the line that passes through the point (-3, -5) and has the given slope

m = -2. Then right an equation for a line perpendicular to it, that passes through point (-6, 1).

5) Write an equation of a line that is parallel that passes through the point (2, 5) and is parallel to the line through the points (-3, 6) and (1, -10)

6) Write an equation of a line that satisfies the given conditions.

a. Parallel to y = 5x, through (2, -1)
b. Perpendicular to y = -2x, through (4,0)
c. Parallel to y = 5, through (-3, 6)
d. Perpendicular to x = -7, through (0, 2)

Practice for #5 from Benchmark Assessment

1) Explain what the graph of the function $x - 2y = 3$ would look like when graphed.

2) Describe the characteristics and positions of functions f, g, h, and k as they would appear on the coordinate plane both individually and in relationship to each other. *Please use specific and accurate vocabulary when comparing the graphs' features. While you may incorporate graphs in your answer, it is not necessary to graph these functions to answer the question.*

$f(x) = -5x + 3$ $g(x) = -5x - 3$ $h(x) = 5x$ $k(x) = \frac{1}{4}x$

3) Suppose the ordered pairs are for the same direct variation. Find the missing value.
   a. (3, 4) and (9, y)
   b. (-2, 5) and (x, -5)

4) Find the slope of a graph of a linear function f given that $f(2) = -3$ and $f(-2) = 5$.

Practice for #6 from Benchmark Assessment

1) Sketch the graph of the inequality on the coordinate plane.
   a. $4x + 3y \le 24$
   b. $\frac{1}{3}x - \frac{2}{3}y \ge 2$
   c. $x + 6y \le 12$

Practice for #7 from Benchmark Assessment

1) Plot the points and draw line segments connecting the points to create the polygon. Then write a system of linear inequalities that defines the polygonal region. Find the area of each polygon.
   a. Triangle: (-2,0), (2,0),(0,2)
   b. Trapezoid: (-1,1), (1,3), (4,3), (6,1)

Practice for #8 from Benchmark Assessment

a. Given the sequence: 5, 7, 9, 11… If 5 is considered the first term, what algebraic rule could describe this pattern? Provide the recursive and explicit rule.
b. Sketch the graph of the sequence in which the first term is 8 and the following equation holds: NEXT =Now-3
c. Tell whether y varies directly with x. If it does, write the function rule for the relationship between the data.

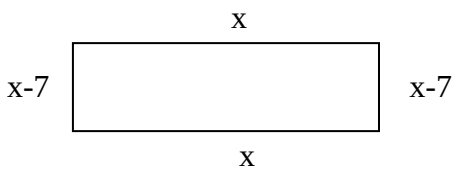
x	-2	-1	3	4
f(x)	4	2	-6	-8

d. Consider the table below. Does the relationship between "d" and "A" appear to be a linear relationship? Show why or why not. Write a rule that could be used to predict other values in the table and use this rule to find the value of A when d=100.

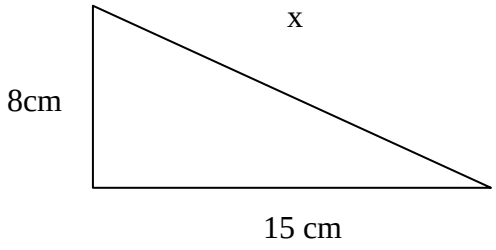
d	-1	0	1	2
A	1	-1	-3	-5

Practice for #9 from Benchmark Assessment

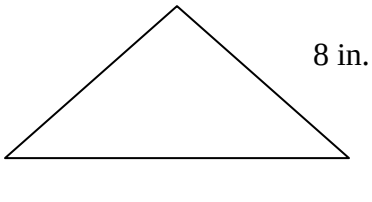
a. Write and simplify an expression for the perimeter of the figure.

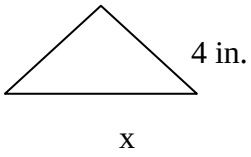


b. The perimeter is 43 centimeters. Find the missing length.

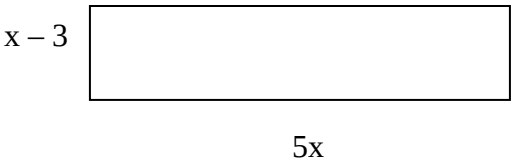


c. The two triangles are similar. Write and solve an equation to find the length of the side marked x.





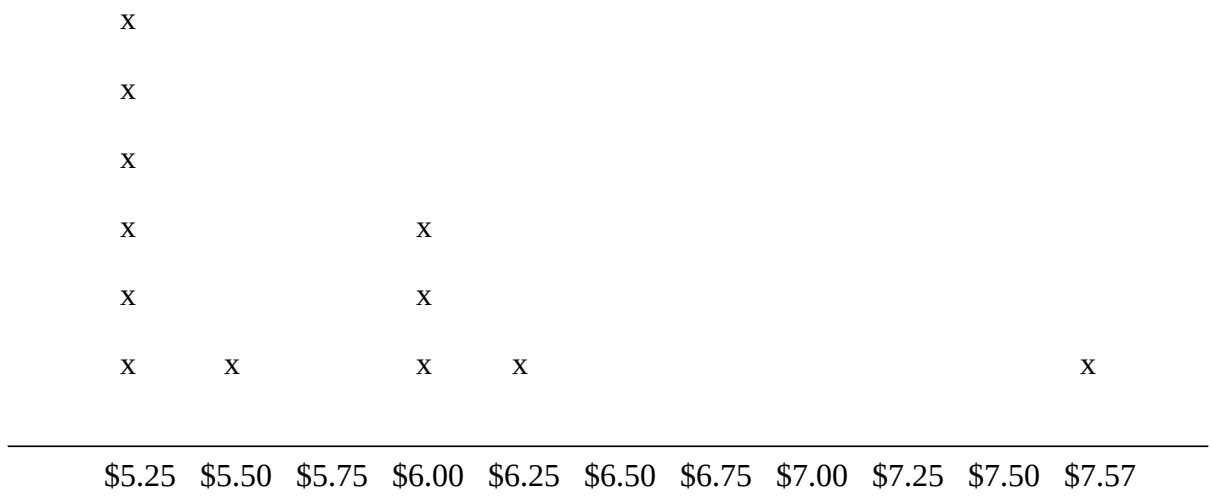
d. The perimeter of the rectangle is 42. Find the value of x.



Practice for #10 from Benchmark Assessment

1) Use the line plot below to find the mean, median, and mode.

What Employees Earn at a Local Fast Food Restaurant



Suppose two of the lowest paid employees quit, how would that affect the measures of central tendency?

2) Use box-and-whisker plots to compare data sets. Use a single number line for each comparison.

1st set: 7 ,12, 25, 3, 1, 29, 30, 7, 15, 2, 5, 10, 29, 1, 10, 30, 18, 8, 7, 29

2nd set: 37, 17, 14, 43, 27, 19, 32, 1, 8, 48, 26, 16, 28, 6, 25, 18

- Compare and contrast the box plots. Be sure to reference the medians and the extremes to support your statements.