

**Instructions:** You may use a calculator on this test so don't use one to practice. On the actual exam, all work must be shown in order to receive all points for all questions so practice showing all work. Practice **boxing your final answer**. Any answer that is a fraction must be in lowest terms and as mixed number for full credit. Since you can use a 5x8 notecard on the test use your notecard to practice or make one based on the problems you got wrong. Happy studying!

1. Simplify the following expression:  $\frac{3}{5}(x - 5) - \frac{1}{4}(7 - 3x)$   
You must use fractions! No decimals allowed.

2. Clear the following equation:  $\frac{2}{3}x + \frac{1}{5}(\frac{1}{10} - x) = \frac{1}{15}(x - 15)$   
**Don't Solve!**

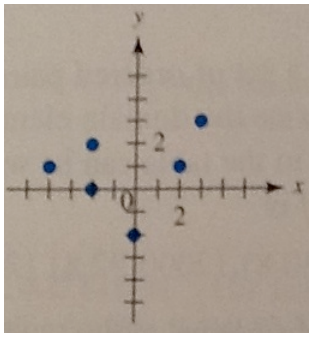
3. Solve for **p**:  $B = n(2p - 5)$   
If there is a quotient in your answer it must contain simplified **individual** terms where possible.

4. In 2005, the percentage of Americans who thought the press had too much freedom was 39%. The percentage is decreasing at a rate of 2.4% per year. Find a linear model to describe the percentage of Americans, P, that think that the press has too much freedom as a function of years, t, since 2000.

5. Scientists believe that the temperature of the Earth's surface is rising and that the rise can be modeled using a linear function. Let  $T(y)$  be the function that represents the average temperature of the Earth's surface in °F, "y" years since 1900.
- a) Using the fact that in 1975 the Earth's average surface temperature was 74°F and in 2000 it was 82.9°F, find the linear function  $T(y)$ . Give the slope as a decimal.
- b) Predict the average surface temperature of the Earth in 2025. Show your prediction using function notation.
- c) Interpret the meaning of the slope in this model using units and in terms of the actual numeric slope?
- d) Interpret the meaning of the  $T(0)$  in this model? Use the units of the dependent and the true meaning of the independent at zero.

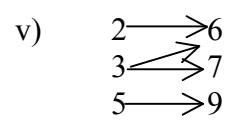
6. a) Determine if each of the following relations are functions and justify your answer.  
 b) Give the domain and range of the relation in iv).

i)  $f(x) = 2\sqrt{x-1}$       ii)  $D: \{x \mid x \geq 1\}$



x	y
-1	4
-2	-3
2	13
1	6

iv)  $\{(-2,2),(2, 5),(5, 3)\}$



7. Referring to #6 above, answer the questions below. Assume that each of the problems above represent  $f(x)$  whether they are actually functions or named as  $f(x)$  to begin. Assume whether it is a function, a graph or a table it is named  $f(x)$ .

a) For i) in #6, find  $f(5)$

b) For ii) in #6, find  $f(0)$

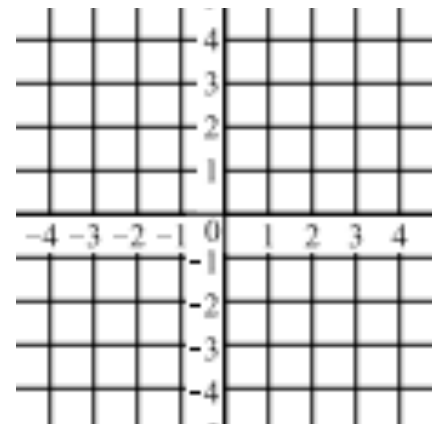
c) For iii) in #6, find  $f(x) = 6$

8. For the equation:  $6 + 3y = -2x$   
 a) Put the equation in slope-intercept form and graph using 3 labeled points.

b) Give the slope.  $m =$  \_\_\_\_\_

c) Give the y-intercept as an ordered pair \_\_\_\_\_

d) Give the x-intercept as an ordered pair \_\_\_\_\_  
 Show your work.



e) Give the equation of a line **parallel** to  $6 + 3y = -2x$  passing through the point  $(3, -2)$   
 Show all work using the point-slope form to start and ending in slope-intercept form.

f) What is the slope of a line **perpendicular** to  $6 + 3y = -2x$ ? \_\_\_\_\_

g) Give the equation of a line **perpendicular** to  $6 + 3y = -2x$  passing through the point  $(0, -4)$

9. For  $f(x) = -2x + 4$  find  $f(5a - 7)$

10. Solve & graph the following on a number line:  $-2 \leq 1 - 3x < 16$

11. Solve & give **interval notation** for the following:  $3(2x + 1) - 7x > 1 + 5(2x - 4)$

12. One of the following diagrams shows the graph of  $2x - y = 2$ .
- a) Circle the diagram that shows the graph.
  - b) Draw a point on that graph and label it with its ordered pair (coordinate pair).  
This point should be a solution of the equation  $2x - y = 2$ .
  - c) Show a check to see that it is the solution.

