

Math 2303
Test 3 Review
Chapter 3 and 4

Topic 1: Use the order of operations rule to simplify the following expressions:

1A. $\frac{1}{2}(6+10) - 4(3^2 - 2^3)$

1B. $\frac{3(3-5^2) + 6^2(1-3)}{5(1-4)^2}$

1C. $12 \div 2 \cdot 5 \div 10 \cdot 3$

1D. $3 - 2\sqrt{81}$

Topic 2: Understanding the concept of a solution to an equation or inequality, and using appropriate techniques to solve equations and inequalities.

2A. Is $x = 3$ a solution to the equation $3x - 4 = 2(x - 5) + 2^2 - (x - 12)$?

2B. Is $y = -2$ a solution to the inequality $2y - 1 < 0$?

2C. Is $x = -1$ and $y = 4$ a solution to the inequality $-2x + y \leq 4$?

2D. Look at the following solution to the equation $2x + 3 = -3(2 - x) + 7$. Where is the mistake made? What was the mistake?

$$2x + 3 = -3(2 - x) + 7$$

$$2x + 3 = -6 - 3x + 7$$

$$2x + 3 = 1 - 3x$$

$$-x + 4 = 0$$

$$x = 4$$

2E. Look at the following solution to the inequality $-2x + 3 \geq x - 5$. Where is the mistake, and what is the mistake?

$$-2x + 3 \geq x - 5$$

$$-2x \geq x - 8$$

$$-3x \leq -8$$

$$x \geq \frac{8}{3}$$

Topic 3: Solving a Linear Equation

Solve for x . Leave your answer as a fraction in reduced form.

3A. $-5(3 - 2x) = 7x$

3B. $4 - \frac{2}{3}x = -5$

3C. $\frac{x-1}{6} = \frac{2x+3}{3}$

$$3D. \frac{1}{2}(x-2) + \frac{2}{3}(5x+6) = \frac{5}{6}$$

Topic 4: Solve a Linear Inequality

Solve the following inequalities for x.

4A. $-4x + 8 < 20$

4B. $4x - 1 < 2x + 7$

4C. $2 \leq x + 1 < 5$

4D. $3(x - 4) \geq 2 - (x - 6)$

Topic 5: Using formulas

5A. Find the perimeter of a rectangle that is 3 ft long and 5.6 ft wide.

5B. Find the volume of a cylinder that is 40 cm high and has a radius of 4 cm.

5C. Fred invested a certain amount of money in an account that earns 5% simple interest. If he earned \$55 in simple interest after leaving the money in the account for 4 years, how much money was originally invested?

5D. Sam invested \$2,450 in an account earning 5.6% simple interest for 8 years. How much money was in the account at the end of 8 years?

5E. The population on a small island grows exponentially with a growth constant of 0.012. If there were 10,000 people on the island at the start of the study, how many people were on the island after 20 years?

Topic 6: Word Problems

For each problem – define a variable, write an equation and solve it and then use your solution to answer the question. Be sure to state your answer with appropriate units.

6A. The length of a rectangle is 6 inches more than its width. The perimeter is 84 inches. Find the dimensions of the rectangle.

6B. The sum of two numbers is 46. One of the numbers is 8 more than the other number. Find the two numbers.

6C. A recipe uses $6\frac{1}{2}$ cups of sugar makes 120 cookies. Suppose you need to make 360 cookies. How much sugar will you need to make 360 cookies?**Topic 7: Lines**Part I: Slope

7A. Find the slope of the line that passes through the points (-3, 4) and (5, -1).

7B. Find the slope of the line $3x - 2y = -4$.Part II: Intercepts7C. Find the x-intercept and y-intercept of the line $12x - 30y = 60$.7D. Find the x-intercept and the y-intercept of the line $y = -3x + 1$.Part III: Writing the Equation of a Line7E. Find the equation of the line that has slope $-1/2$ and passes through the point (0, -2).

7F. Find the equation of the line that passes through the points (-1, 2) and (3, -1).

7G. Find the equation of the line that passes through the points (-2, 3) and (5, 3).

7H. Find the equation of the line that passes through the points $(2, -4)$ and $(2, 0)$.

Part IV: Parallel and Perpendicular Lines

7I. Find the slope of any line parallel to the line $5x - y = -4$.

7J. Find the slope of any line perpendicular to the line $7x + 8y = -3$.

7K. Find the equation of the line that is parallel to the line $5x - y = -4$ and passes through the point $(-4, 2)$.

Topic 8: Graphing Lines

8A. Given the line $2x - 3y = 12$, find its x-intercept, y-intercept and graph the line.

8B. Graph the line that has a y-intercept of -2 and is perpendicular to the line $x + 2y = 3$.

Topic 9: Graphing Linear Inequalities

9A. Graph the inequality $x - 2y \geq 4$.

9B. Graph the inequality $y \leq 4x - 3$.