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Date:

UNIT 7 **REVIEW**

QUIZ REVIEW: SLOPES AND EQUATIONS OF LINES

1. What is an equation of the line that passes through the point $(-2, 3)$ and is parallel to the line whose equation is $y = \frac{3}{2}x - 4$?

1) $y = \frac{-2}{3}x$

2) $y = \frac{-2}{3}x + \frac{5}{3}$

3) $y = \frac{3}{2}x$

4) $y = \frac{3}{2}x + 6$

$m = \frac{3}{2}$

$\parallel m = \frac{3}{2}$

$x_1 \; y_1$

$y - 3 = \frac{3}{2}(x - -2)$

$y - 3 = \frac{3}{2}(x + 2)$

$y - 3 = \frac{3}{2}x + 3$

$+3 \qquad +3$

$y = \frac{3}{2}x + 6$

2. Which equation represents the line that is perpendicular to $2y = x + 2$ and passes through the point $(4, 3)$?

1) $y = \frac{1}{2}x - 5$

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

3) $y = -2x + 11$

4) $y = -2x - 5$

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

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

$m = \frac{1}{2}$

$\perp m = \frac{-2}{1}$

$x_1 \; y_1$

$y - 3 = -2(x - 4)$

$y - 3 = -2x + 8$

$+3 \qquad +3$

$y = -2x + 11$

3. Which equation represents a line parallel to the line whose equation is $2y - 5x = 10$ and passes through the point $(2, 7)$?

$x_1 \; y_1$

1) $y + 7 = -\frac{2}{5}(x + 2)$

2) $y + 7 = \frac{5}{2}(x + 2)$

3) $y - 7 = -\frac{2}{5}(x - 2)$

4) $y - 7 = \frac{5}{2}(x - 2)$

$y - 7 = \frac{5}{2}(x - 2)$

$+5x \quad +5x$

$\frac{2y}{2} = \frac{5x}{2} + \frac{10}{2}$

$y = \frac{5}{2}x + 5$

$m = \frac{5}{2}$

$\parallel m = \frac{5}{2}$

4. Line m and point $P(3, -2)$ are shown in the graph below. Which equation represents the line passing through P and parallel to line m?

1) $y = 2x + 7$

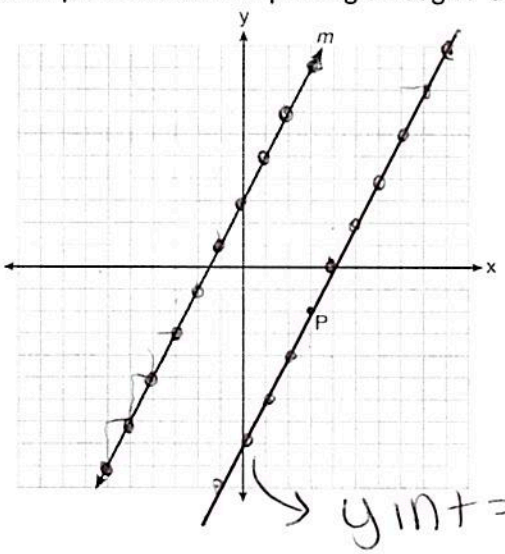
2) $y = 2x - 8$

3) $y = -\frac{1}{2}x + 2$

4) $y = -\frac{1}{2}x - \frac{1}{2}$

$m_m = \frac{2}{1}$

$\parallel m = \frac{2}{1}$



y int = -8.

$x_1\ y_1\ \ x_2\ y_2$

5. Which equation represents the perpendicular bisector of $\overline{AB}$ whose endpoints are $A(8, 2)$ and $B(0, 6)$?

1) $y - 4 = 2(x - 4)$

2) $y - 4 = -\frac{1}{2}(x - 4)$

3) $y - 6 = -\frac{1}{2}x$

4) $y - 2 = 2(x - 8)$

STEP 1: $\frac{6-2}{0-8} = \frac{4}{-8} = -\frac{1}{2}$

STEP 2: $\left(\frac{8+0}{2}, \frac{2+6}{2}\right) = (4, 4)$

STEP 3: $y - 4 = -\frac{1}{2}(x - 4)$

$x_1\ y_1$

6. Find an equation of the line passing through the point $(6, 5)$ and perpendicular to the line whose equation is $2y + 3x = 6$.

$-3x - 3x$

$\frac{2y}{2} = \frac{-3x}{2} + \frac{6}{2}$

$y = -\frac{3}{2}x + 3$

$m = -\frac{3}{2}$

$\perp m = \frac{2}{3}$

$y - 5 = \frac{2}{3}(x - 6)$

OR

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

$+5 \qquad +5$

$y = \frac{2}{3}x + 1$

$x_1 y_1$

7. Find an equation of the line passing through the point $(5,4)$ and parallel to the line whose equation is $2x + y = 3$.

$y - 4 = -2(x - 5)$

OR

$y - 4 = -2x + 10$

$+4 \quad +4$

$y = -2x + 14$

$-2x \quad -2x$

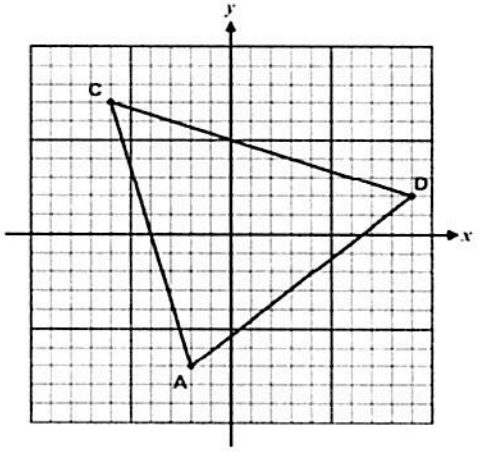
$y = -2x + 3$

$m = -2$

$11m = -2$

$x_1 y_1 \quad x_2 y_2$

8. In the diagram shown, ΔADC has vertices $A(-2,-7)$, $D(9,2)$, and $C(-6,7)$. What is the slope of the altitude drawn from C to $\overline{AD}$?



↳ ① need slope of AD

② Find ⊥ slope

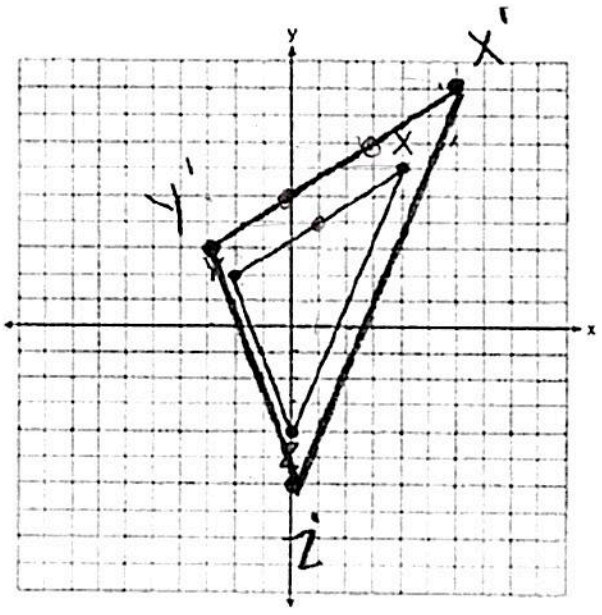
$m_{\overline{AD}} = \frac{2 - -7}{9 - -2} = \frac{9}{11}$

$\perp m = -11/9$

9. Triangle *XYZ* is graphed on the set of axes below. On the same set of axes, $\Delta X'Y'Z'$, the image of ΔXYZ after a dilation with a scale factor of $\frac{3}{2}$ centered at the origin is shown. Use slopes to explain why $\overline{Y'X'} \parallel \overline{YX}$.

$m_{\overline{yx}} = \frac{2}{3} \qquad m_{\overline{y'x'}} = \frac{2}{3}$

$\overline{y'x'} \parallel \overline{yx}$ bc the slopes are equal.



$x_1\ y_1 \quad x_2\ y_2$

10. If $\overline{AB}$ is defined by the endpoints $A(-1,0)$ and $B(6,4)$, write an equation of the line that is the perpendicular bisector of $\overline{AB}$.

STEP 1: $\frac{4-0}{6-1} = \frac{4}{7}$ $\quad \perp m = -\frac{7}{4}$

STEP 2: $\left(\frac{-1+6}{2}, \frac{0+4}{2}\right) = \left(\frac{5}{2}, 2\right)$

STEP 3: $y-2 = -\frac{7}{4}\left(x - \frac{5}{2}\right)$

$$\boxed{y-2 = -\frac{7}{4}\left(x+\frac{5}{2}\right)}$$

$x_1\ y_1 \quad x_2\ y_2$

11. In rhombus *ABCD*, the coordinates of the endpoints of the diagonal $\overline{BD}$ are $B(8,2)$ and $D(2,6)$. Write an equation of the diagonal $\overline{AC}$ that is the perpendicular bisector of $\overline{BD}$. [Use of the set of axes below is optional.]

STEP 1: $\frac{6-2}{2-8} = \frac{4}{-6} = -\frac{2}{3}$

$\perp m = \frac{3}{2}$

STEP 2: $\left(\frac{8+2}{2}, \frac{2+6}{2}\right) = (5,4)$

$x_1\ y_1$

STEP 3: $\boxed{y-4 = \frac{3}{2}(x-5)}$