

Chapter 6B Practice Test (Sections 6.3, 6.4, 6.6)

Short Answer

1. The grocery store sells kumquats for \$4.25 a pound and Asian pears for \$2.25 a pound. Write an equation in standard form for the weights of kumquats k and Asian pears p that a customer could buy with \$18.

$$4.25k + 2.25p = 18$$

2. The grocery store sells apples for \$5.00 a pound and bananas for \$3.50 a pound. Write an equation in standard form for the weights of apples a and bananas b that a customer could buy with \$20.

$$5.00a + 3.50b = 20$$

3. At the beginning of the year, you have a balance of \$200 in your bank account. Each month you deposit \$50.
(a) Write an equation for this situation.

$$y = 50x + 200$$

- (b) Use the equation to find the balance in September. Hint: September is the 9th month.

$$\begin{aligned} \text{Let } x &= 9 & y &= 50(9) + 200 \\ & & &= 450 + 200 \\ & & &= \$650 \end{aligned}$$

4. In February, you have a balance of \$270 in your bank account. Each month you take out \$45.
(a) Write an equation for this situation.

$$y = -45x + 270$$

- (b) Use the equation to find the balance in June. Hint: June is the 6th month.

$$\begin{aligned} \text{Let } x &= 6 & y &= -45(6) + 270 \\ & & &= -270 + 270 \\ & & &= 0 \end{aligned}$$

Are the graphs of the lines in the pair parallel? Show work to back up your answer.

5. $y = \frac{1}{6}x + 8$

$$\begin{array}{r} -2x + 12y = -11 \\ \hline +2x \quad +12y \end{array}$$

$$\frac{12y}{12} = \frac{-2x - 11}{12}$$

6. $y = 5x + 6$

$$\begin{array}{r} -18x + 3y = -54 \\ \hline +18x \quad +3y \end{array}$$

$$\frac{3y}{3} = \frac{-54}{3}$$

$$y = -18$$

Circle your answer: YES NO

$$y = \frac{1}{6}x - \frac{11}{12}$$

same slope
different y-int.

Circle your answer: YES NO

Different slopes

7. $y = x - 19$
 $-2x + 2y = -3$

Circle your answer: YES NO

$\frac{2y = 2x - 38}{2} = \frac{2x - 3}{2}$

$y = x - 1.5$

same slope,
different y-intercepts

Write an equation for the line that is parallel to the given line and that passes through the given point.

8. $y = -5x + 3; (-6, 3)$

$m = -5$
 point-slope
 $y - y_1 = m(x - x_1)$
 $y - 3 = -5(x + 6)$

$y - 3 = -5(x + 6)$
 $y - 3 = -5x - 30$
 $+3$
 $y = -5x - 27$

9. $y = \frac{3}{4}x - 9; (-8, -18)$

$m = \frac{3}{4}$
 point-slope
 $y + 18 = \frac{3}{4}(x + 8)$

$y + 18 = \frac{3}{4}x + 6$
 -18
 $y = \frac{3}{4}x - 12$ slope-int

slope-int
 $y = -5x - 27$

Tell whether the lines for each pair of equations are parallel, perpendicular, or neither.

10. $7x - 4y = 4$
 $x - 4y = 3$

$\frac{7x - 4y = 4}{-7x} = \frac{-4y = -7x + 4}{-4}$
 $y = \frac{7}{4}x - 1$

$y = \frac{7}{4}x - 1$

$\frac{x - 4y = 3}{-4y = -x + 3}{-4} = \frac{-1x + 3}{-4}$
 $y = \frac{1}{4}x - \frac{3}{4}$

$y = \frac{1}{4}x - \frac{3}{4}$
 neither

11. $y = -\frac{1}{2}x - 11$
 $16x - 8y = -8$

$\frac{16x - 8y = -8}{-16x} = \frac{-8y = -16x - 8}{-8}$
 $y = 2x + 1$

$y = 2x + 1$
 \perp

Write the equation of a line in slope-intercept form that is perpendicular to the given line and that passes through the given point.

12. $4x - 12y = 2; (10, -1)$

$\frac{4x - 12y = 2}{-12y = -4x + 2}{-12} = \frac{1}{3}x - \frac{1}{6}$

$m_{\perp} = -3$

$y - (-1) = -3(x - 10)$
 $y + 1 = -3(x - 10)$

$y + 1 = -3x + 30$
 -1
 $y = -3x + 29$

13. $y = \frac{2}{3}x + 9; (-6, 5)$

$m_{\perp} = -\frac{3}{2}$

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

$y - 5 = -\frac{3}{2}x - 9$
 $+5$
 $y = -\frac{3}{2}x - 4$

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

14. $y = \frac{3}{5}x + 5$; $(9, -4)$

$m_{\perp} = -\frac{5}{3}$

$y + 4 = -\frac{5}{3}(x - 9)$

$y + 4 = -\frac{5}{3}x - 15$

15. $3x + 12y = -3$; $(6, 3)$

$y = -\frac{3}{12}x - \frac{3}{12}$

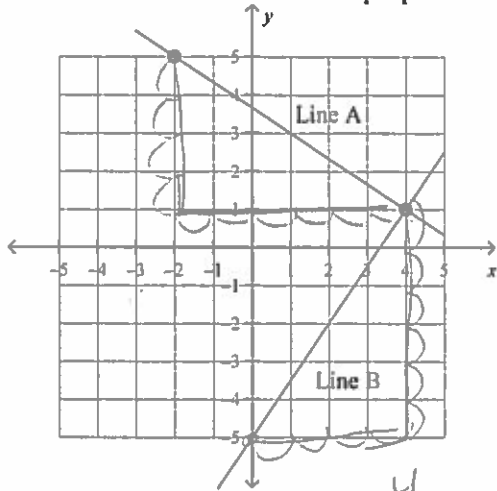
$y = -\frac{1}{4}x - \frac{1}{4}$

$m_{\perp} = 4$

$y - 3 = 4(x - 6)$

$y - 3 = 4x - 24$

16. Assume that the two lines are perpendicular.



$y = 4x - 21$

a. Find the slope of line A.

$-\frac{4}{6} = -\frac{2}{3}$

b. Find the slope of line B.

$\frac{4}{6} = \frac{2}{3}$

c. Find a point-slope equation for line A.

$(-2, 5)$
 x_1, y_1

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

OR

$(4, 1)$
 x_1, y_1

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

d. Find a slope-intercept equation for line B.

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

$b = -5$

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