

### 3.5 Practice Problems

- Find the coordinate of Y along the directed line segment XZ so that XY to YZ is the given ratio.
  - $X(6, -2)$ ,  $Z(1, -4)$  ratio is 1 to 4.
  - $X(-10, 12)$ ,  $Z(15, -8)$  ratio is 2 to 3.
- Give equations; determine whether the following lines are parallel, perpendicular or neither.
  - $4x - 2y = 8$  and  $y = 2x + 7$
  - $y = (1/4)x + 6$  and  $y = 6 + 4x$
  - $y + 3x = 6$  and  $y = (1/3)x + 5$
- Given two points on a line, determine whether the following lines are parallel, perpendicular or neither.
  - Line 1:  $(-3, 1)$  and  $(-7, -2)$     Line 2:  $(2, -1)$  and  $(8, 4)$
  - Line 1 :  $(10, 5)$  and  $(-8, 9)$     Line 2:  $(2, -4)$  and  $(11, -6)$
- Write the equation of a line a) parallel to the given line and through the given point, b) perpendicular to the given line through the given point.  
 $P(3, 8)$  ,  $y = (1/5)(x + 4)$
- Write the equation of a line a) parallel to the given line and through the given point, b) perpendicular to the given line through the given point.  
 $P(4, 5)$  ,  $y = 3x + 7$
- Write the equation of a line a) parallel to the given line and through the given point, b) perpendicular to the given line through the given point.  
 $P(-3, 7)$ ,  $x = 3$
- Find the distance from  $(-9, -3)$  and line  $y = x - 6$ .
- Find the equation of the perpendicular bisector of the line segment with the given endpoints.
  - $(-6, -6)$  and  $(2, 2)$
  - $(10, 22)$  and  $(4, 10)$
- Is the quadrilateral QRST a parallelogram (has opposite sides parallel) given  $Q(5,9)$ ,  $R(9,7)$   $S(8,4)$  and  $T(4, 6)$ ?
- Is a triangle with vertices  $(-2, 4)$ ,  $(3, 6)$  and  $(2, -3)$  a right triangle?
- Solve the following system.  
 $Y = 4x + 9$   
 $Y - 4x = 1$   
What happened? Why?
- Can two non-vertical parallel lines have the same y-intercept?
- The line through  $(-1, k)$  and  $(-7, -2)$  is perpendicular to the line  $y = x + 1$ . What is the value of k?
- What is the distance between  $y = 2x$  and  $y = 2x + 5$ ?