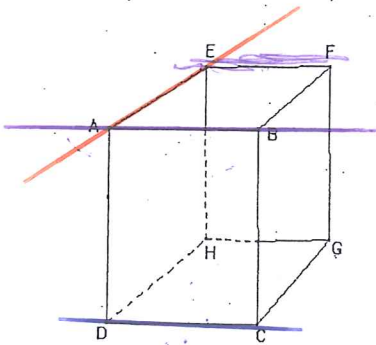


CHAPTER 3 TEST REVIEW

For questions 1 and 2, refer to figure.

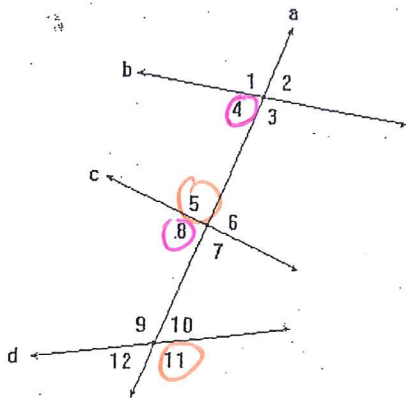


1. Which segment is skew to \overline{CD} ?
- a. \overline{EF} b. \overline{AE} c. \overline{AB} d. \overline{HG}
2. Which segment is parallel to \overline{AB} ?
- a. \overline{DC} b. \overline{BF} c. \overline{EH} d. \overline{FG}

1. AE

2. DC

For questions 3 - 8, refer to the figure. Identify the specific name for each angle pair.

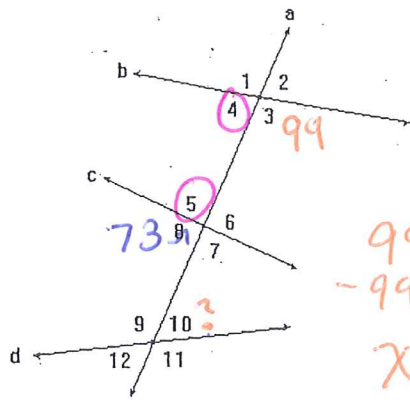


3. $\angle 4$ and $\angle 8$
- a. alternate exterior b. alternate interior
 c. corresponding d. consecutive interior

3. C
Corresponding

4. $\angle 5$ and $\angle 11$
- a. alternate exterior b. alternate interior
 c. corresponding d. consecutive interior

4. A
Alternate Exterior



Consecutive Interior Angles

$$\begin{aligned}
 99 + x &= 180 \\
 -99 &\quad -99 \\
 x &= 81
 \end{aligned}$$

5. Given $b \parallel d$ and $m\angle 3 = 99$, find $m\angle 10$.

- a. 99 b. 61
 c. 81 d. 30

5. 81

6. Given $c \parallel d$ and $m\angle 8 = 73$, find $m\angle 10$.

- a. 17 b. 73
 c. 107 d. 90

$$\begin{aligned}
 \angle 8 &\cong \angle 10 \\
 x &= 73 \\
 \text{AIA}
 \end{aligned}$$

6. 73

7. Given $b \parallel c$ and $m\angle 7 = 85$, find $m\angle 1$.

- a. 85 b. 95
 c. 58 d. 42.5

AEA

7. 85

8. If $m\angle 4 = 10x - 6$ and $m\angle 5 = 4x + 18$, find x so that $b \parallel c$.

$$\begin{aligned}
 \angle 4 + \angle 5 &= 180 \\
 10x - 6 + 4x + 18 &= 180 \\
 14x + 12 &= 180 \\
 14x &= 168 \\
 x &= 12
 \end{aligned}$$

8. $x =$ 12

9. What is the slope of a line parallel to the line containing (2,5) and (6, -11)?

9. -4

- a. -13 b. -4 c. -1/4 d. 4

$$+4 \left\langle \begin{array}{c|c} x & y \\ \hline 2 & 5 \\ 6 & -11 \end{array} \right\rangle + 7 - 16 \quad \frac{\Delta y}{\Delta x} = \frac{-16}{4} = -4$$

10. Find the slope of a line perpendicular to the line containing (-2, -9) and (8,6)

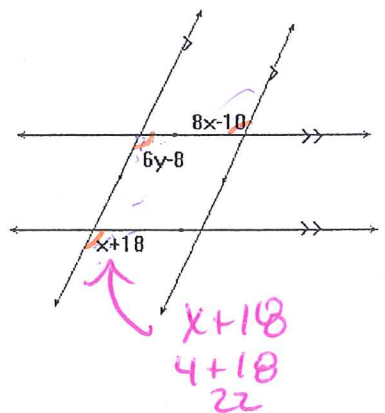
10. $-\frac{2}{3}$

- a. -2/3 b. 2/5 c. 2/3 d. 3/2

$$10 \left\langle \begin{array}{c|c} x & y \\ \hline -2 & -9 \\ 8 & 6 \end{array} \right\rangle + 15 \quad \frac{\Delta y}{\Delta x} = \frac{15}{10} = \frac{3}{2} \downarrow -\frac{2}{3}$$

11. Find x and y in the figure.

11. x = 4
y = 5



$$\begin{aligned} x+18 &= 8x-10 \\ -8x-18 &= -8x-10 \\ \hline -7x &= -28 \\ \hline x &= 4 \\ 6y-8 &= 22 \\ 6y &= 30 \\ y &= 5 \end{aligned}$$

Find the slope of each line through the given points.

12. \overrightarrow{SW} , S(-1,2), W(0,4)

12. m = 2

$$+1 \left\langle \begin{array}{c|c} x & y \\ \hline -1 & 2 \\ 0 & 4 \end{array} \right\rangle + 2 \quad \frac{\Delta y}{\Delta x} = \frac{2}{1}$$

13. \overline{GH} , G(-2,5), H(1,-7)

13. $m = -4$

$$+3 \left\langle \begin{array}{c|c} x & y \\ \hline -2 & 5 \\ 1 & -7 \end{array} \right\rangle -12 \quad \frac{\Delta y}{\Delta x} = \frac{-12}{3} = -4$$

Determine whether \overline{KM} and \overline{ST} are parallel, perpendicular, or neither.

14. K(-1,-8), M(1,6), S(-2,-6), T(2,10)

14. neither

$$+2 \left\langle \begin{array}{c|c} x & y \\ \hline -1 & -8 \\ 1 & 6 \end{array} \right\rangle +14 \quad \frac{\Delta y}{\Delta x} = \frac{14}{2} = 7$$

$$+4 \left\langle \begin{array}{c|c} x & y \\ \hline -2 & -6 \\ 2 & 10 \end{array} \right\rangle +16 \quad \frac{\Delta y}{\Delta x} = \frac{16}{4} = 4$$

15. K(-3,-5), M(5,-1), S(-2,6), T(4,3)

15. neither

$$+8 \left\langle \begin{array}{c|c} x & y \\ \hline -3 & -5 \\ 5 & -1 \end{array} \right\rangle +4 \quad \frac{\Delta y}{\Delta x} = \frac{4}{8} = \frac{1}{2}$$

$$+6 \left\langle \begin{array}{c|c} x & y \\ \hline -2 & 6 \\ 4 & 3 \end{array} \right\rangle -3 \quad \frac{\Delta y}{\Delta x} = \frac{-3}{6} = -\frac{1}{2}$$

$$\frac{1}{2} \quad -\frac{1}{2}$$

16. K(1,-4), M(5,12), S(-8,3), T(-4,2)

16. perpendicular

$$+4 \left\langle \begin{array}{c|c} x & y \\ \hline 1 & -4 \\ 5 & 12 \end{array} \right\rangle +16 \quad \frac{\Delta y}{\Delta x} = \frac{16}{4} = 4$$

$$+4 \left\langle \begin{array}{c|c} x & y \\ \hline -8 & 3 \\ -4 & 2 \end{array} \right\rangle -1 \quad \frac{\Delta y}{\Delta x} = \frac{-1}{4} = -\frac{1}{4}$$

$$4 \quad \frac{1}{4}$$

For questions 17 - 19, write an equation in slope-intercept form for the line that satisfies the given conditions.

17. $m = -\frac{4}{9}$ y-intercept = 2

17. $y = -\frac{4}{9}x + 2$

$$y = mx + b$$

↑ slope ↑ y-int

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

slope

Point

18. $m = 3$, contains $(2, -3)$

$$y - y_1 = m(x - x_1)$$

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

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

$$y + 3 = 3x - 6$$

$$y = 3x - 9$$

18. $y = 3x - 9$

19. Contains $(-4, 2)$ and $(8, -1)$

19. $y = -\frac{1}{4}x + 0$

| x | y |
|----|----|
| -4 | 2 |
| 8 | -1 |

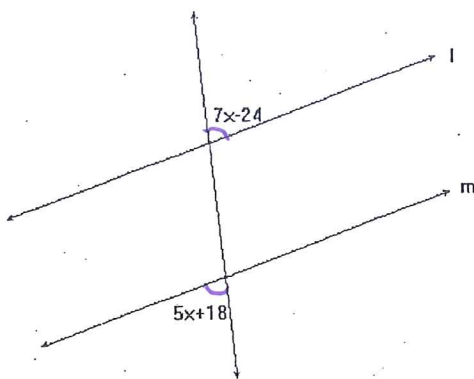
$$\frac{\Delta y}{\Delta x} = \frac{-3}{12} = -\frac{1}{4} \quad (8, -1)$$

$$y - y_1 = m(x - x_1)$$

$$y - (-1) = -\frac{1}{4}(x - 8)$$

For questions 20 and 21, find x so that $l \parallel m$

20.



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

$$y = -\frac{1}{4}x + 0$$

20. $x =$ 21

$$\begin{array}{r} 7x - 24 = 5x + 18 \\ -5x \quad -5x \\ \hline 2x - 24 = 18 \end{array}$$

$$2x - 24 = 18$$

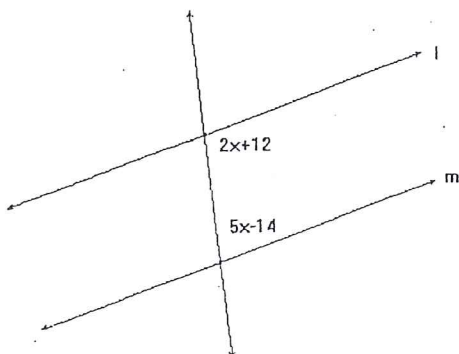
$$\begin{array}{r} 2x - 24 = 18 \\ +24 \quad +24 \\ \hline 2x = 42 \end{array}$$

$$2x = 42$$

$$x = 21$$

21. $x =$ 26

21.



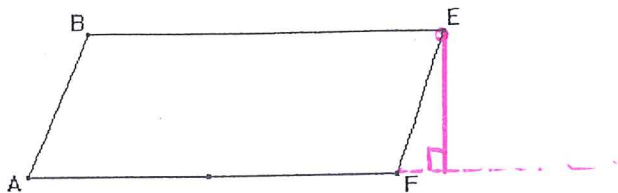
$$2x + 12 + 5x - 14 = 180$$

$$7x - 2 = 180$$

$$7x = 182$$

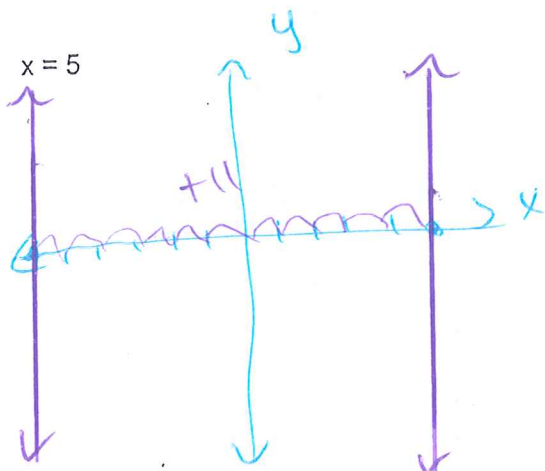
$$x = 26$$

22. Draw the segment that represents the distance from E to \overline{AF}



For questions 23 and 24, find the distance between each pair of parallel lines.

23. $x = -6$



23. $d = 11$

$$\begin{aligned} 5 - (-6) \\ 5 + 6 \\ 11 \end{aligned}$$

24. $y = -2x + 5$ $y = -2x - 5$

Bonus question

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

$(0, 5)$

$$y = \frac{1}{2}x + 5$$

Perpendicular
line
equation

$$y = -2x - 5$$

$$y = \frac{1}{2}x + 5$$

$$\frac{1}{2}x + 5 = -2x - 5$$

$$2\frac{1}{2}x = -10$$

$$x = -4$$

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

$$y = 8 - 5$$

$$y = 3$$

24. $d = 4.5$

$(-4, 3)$
 x_2, y_2

$(0, 5)$
 x_1, y_1

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$d = \sqrt{(-4 - 0)^2 + (3 - 5)^2}$$

$$= \sqrt{(-4)^2 + (-2)^2}$$

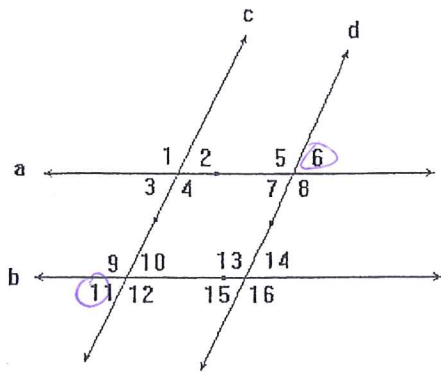
$$= \sqrt{16 + 4}$$

$$= \sqrt{20} = 4.5$$

Complete the following proofs:

25. Given: $c \parallel d, \angle 6 \cong \angle 11$

Prove: $a \parallel b$

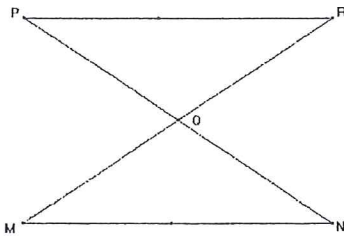


Statements

Reasons

~~1.) Given $c \parallel d$~~
~~2.) $\angle 6 \cong \angle 11$~~
~~3.) $\angle 6 \cong \angle 11$~~
~~4.) $\angle 6 \cong \angle 11$~~
~~5.) $\angle 6 \cong \angle 11$~~
~~6.) $a \parallel b$~~
 1.) $c \parallel d$
 2.) $m\angle 11 = m\angle 14$
 3.) $\angle 6 \cong \angle 11$
 4.) $m\angle 6 = m\angle 11$
 5.) $m\angle 6 = m\angle 14$
 6.) $a \parallel b$
 26. Given: $\angle R \cong \angle N, \angle R \cong \angle P$

1.) Given
 2.) Def. of $\cong \angle$'s
 3.) Given
 4.) Def. of $\cong \angle$'s
 5.) Transitive
 6.) Converse corresponding \angle 's
 Prove: $\overline{PR} \parallel \overline{MN}$



Statements

Reasons

1.) $\angle R \cong \angle N, \angle R \cong \angle P$
 2.) $m\angle R = m\angle N, m\angle R = m\angle P$
 3.) $m\angle N = m\angle P$
 4.) $\overline{PR} \parallel \overline{MN}$

1.) Given
 2.) Def of $\cong \angle$'s
 3.) Transitive Property
 4.) Converse to AIA