

### 3.1 Parallel and Skew Lines

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**Answers**

1. a
2. b
3.  $m\angle 3 = 55^\circ$ ,  $m\angle 1 = 125^\circ$ ,  $m\angle 4 = 125^\circ$
4.  $m\angle 8 = 123^\circ$ ,  $m\angle 6 = 57^\circ$ ,  $m\angle 7 = 57^\circ$
5. No, we cannot say that  $t \perp m$  because we do not know properties of line  $m$ . We would need more information.
6. True
7. True
8. False
9. True
10. False

## 3.2 Perpendicular Lines

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### Answers

- Possible Answers**  $\overline{BW} \perp \overline{VW}, \overline{AB}, \overline{WX}$  and  $\overline{BC}, \overline{CX} \perp \overline{WX}, \overline{BC}, \overline{XY}$ , and  $\overline{DC} \perp \overline{DY} \perp \overline{XY}, \overline{DC}, \overline{ZY}$ , and  $\overline{DE}, \overline{ZE} \perp \overline{ZY}, \overline{ED}, \overline{EA}$ , and  $\overline{ZV}, \overline{AV} \perp \overline{VW}, \overline{AB}, \overline{EA}$  and  $\overline{ZV}$ .
- $\overline{AV}$
- No, because we do not know if  $l \perp m$ .
- $90^\circ$
- $90^\circ$
- $45^\circ$
- $16^\circ$
- $72^\circ$
- $84^\circ$
- $41^\circ$
- $24^\circ$
- $78^\circ$
- Yes
- No
- No
- Yes
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Statement	Reason
1. $l \perp m, l \perp n$	Given
2. $\angle 1$ and $\angle 2$ are right angles	Definition of perpendicular lines
3. $m\angle 1 = 90^\circ, m\angle 2 = 90^\circ$	Definition of right angles
4. $m\angle 1 = m\angle 2$	Transitive PoE
5. $\angle 1 \cong \angle 2$	$\cong$ angles have = measures
6. $m \parallel n$	Theorem #1

### 3.3 Corresponding Angles

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#### Answers

1. Congruent
2. **Possible Answers**  $\angle 1$  and  $\angle 3$ ,  $\angle 2$  and  $\angle 4$ ,  $\angle 5$  and  $\angle 7$ ,  $\angle 6$  and  $\angle 8$ ,  $\angle 9$  and  $\angle 11$ ,  $\angle 10$  and  $\angle 12$ ,  $\angle 13$  and  $\angle 15$ ,  $\angle 14$  and  $\angle 16$ ,  $\angle 1$  and  $\angle 9$ ,  $\angle 5$  and  $\angle 13$ ,  $\angle 2$  and  $\angle 10$ ,  $\angle 6$  and  $\angle 14$ ,  $\angle 3$  and  $\angle 11$ ,  $\angle 7$  and  $\angle 15$ ,  $\angle 4$  and  $\angle 12$ ,  $\angle 8$  and  $\angle 16$
3.  $x = 9^\circ$
4. No, the angle next to  $106^\circ$  is  $74^\circ$ . The corresponding angle to  $74^\circ$  is  $73^\circ$ . They are not equal, so the lines are not parallel.
5. Yes, the corresponding angles are congruent.
6.  $x = 12^\circ$
7.  $x = 6^\circ$
8.  $x = 8^\circ$
9.  $x = 10^\circ$
10.  $x = 2^\circ$

### 3.4 Alternate Interior Angles

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**Answers**

1. Congruent
2. **Possible Answers**  $\angle 2$  and  $\angle 7$ ,  $\angle 6$  and  $\angle 3$ ,  $\angle 5$  and  $\angle 10$ ,  $\angle 6$  and  $\angle 9$ ,  $\angle 7$  and  $\angle 12$ ,  $\angle 8$  and  $\angle 11$ ,  $\angle 14$  and  $\angle 11$ ,  $\angle 10$  and  $\angle 15$
3.  $x = 70^\circ$
4.  $x = 21^\circ$
5.  $x = 31^\circ$
6. Yes, the alternate interior angles are congruent.
7.  $x = 7^\circ$
8.  $x = 5^\circ$
9.  $x = 1^\circ$
10.  $x = 6^\circ$

### 3.5 Alternate Exterior Angles

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**Answers**

1.  $x = 25^\circ$
2. No, the alternate exterior angles are not congruent.
3.  $x = 12^\circ$
4.  $x = 8^\circ$
5.  $x = 14^\circ$
6.  $x = 5^\circ$
7. False, only if the lines are parallel.
8. True
9. False, they're on the exterior.
10. True

### 3.6 Same Side Interior Angles

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#### Answers

1. supplementary
2. supplementary
3. Yes,  $80^\circ$  is a linear pair with  $100^\circ$ . That angle is corresponding with the  $100^\circ$  below.
4.  $\overline{IB} \parallel \overline{AM}$
5.  $\overline{IB} \parallel \overline{AM}$
6.  $x = 30^\circ$
7.  $x = 34^\circ$
8.  $x = 42^\circ$
9. True
10. False, they are supplementary.

### 3.7 Slope in the Coordinate Plane

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**Answers**

1.  $m = \frac{1}{3}$
2.  $m = 1$
3.  $m = \frac{2}{7}$
4.  $m = -2$
5.  $m = 4$
6. undefined
7. undefined
8.  $m = 0$
9. True
10. False, the slope is undefined.

### 3.8 Parallel Lines in the Coordinate Plane

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**Answers**

1. Yes

2. No

3. Yes

4. Yes

5.  $y = -5x - 7$

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

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

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

9.  $y = -\frac{1}{6}x + 7, y = -\frac{1}{5}x - 3$ ; Not parallel

10.  $y = \frac{3}{4}x + 5\frac{1}{4}$

11.  $y = -\frac{1}{3}x + 7$

12.  $x = -3$

13.  $y = -x + 8$



### 3.9 Perpendicular Lines in the Coordinate Plane

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**Answers**

1. Yes

2. No

3. Yes

4. No

5.  $y = -x - 4$

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

7.  $y = -\frac{2}{5}x + 7$

8.  $x = -1$

9. Perpendicular

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

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

10. Perpendicular

$$y = x$$

$$y = -x$$

11. Neither

$$y = -2x + 2$$

$$y = 2x - 3$$

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

13.  $y = 3x - 3$

14.  $y = -7$

15.  $y = x - 8$

### 3.10 Distance Formula in the Coordinate Plane

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**Answers**

1. 17.09 units
2. 19.20 units
3. 5 units
4. 17.80 units
5. 22.20 units
6. 14.21 units
7. 6.40 units
8. 9.22 units
9. 7 units
10. 10.44 units

### 3.11 Distance Between Parallel Lines

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**Answers**

1. 7 units
2. 11 units
3. 12 units
4. 7 units
5. 4 units
6. 10 units
7. 12 units
8. 9 units
9. 8 units
10. 19 units
11. 9.90 units
12. 2.83 units
13. 4.24 units
14. 12.73 units