NAME _____ DATE _____

Location, Location, Location!
Line Relationships

Vocabulary

Write the term or terms from the box that best complete each statement.

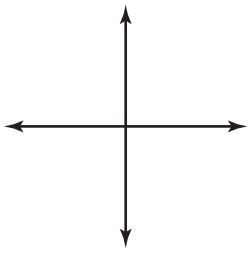
intersecting lines	**perpendicular lines**	**parallel lines**
coplanar lines	**skew lines**	**coincidental lines**

1. Parallel lines are lines that lie in the same plane and do not intersect.
2. Intersecting lines are lines in a plane that cross or intersect each other.
3. Coincidental lines are lines that have equivalent linear equations and overlap at every point when they are graphed.
4. Perpendicular lines are lines that intersect at a right angle.
5. Skew lines are lines that do not lie in the same plane.
6. Coplanar lines are lines that lie in the same plane.

Problem Set

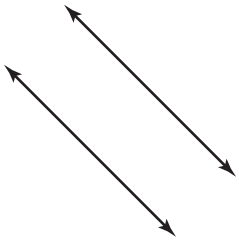
Describe each sketch using the terms *intersecting lines, perpendicular lines, parallel lines, coplanar lines, skew lines,* and *coincidental lines*. More than one term may apply.

1.



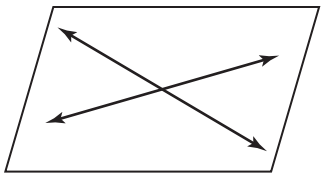
perpendicular lines, intersecting lines, coplanar lines

2.



parallel lines, coplanar lines

3.

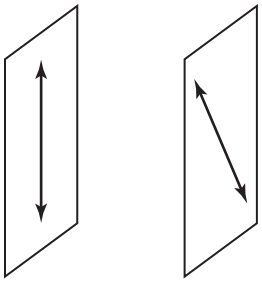


coplanar lines, intersecting lines

4.

coincidental lines, coplanar lines

5.



skew lines

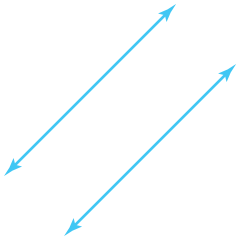
6.

intersecting lines, coplanar lines

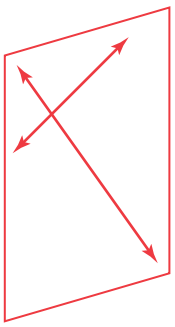
Sketch an example of each relationship.

Answers will vary.

7. parallel lines

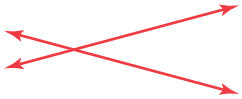


8. coplanar lines



NAME _____ DATE _____

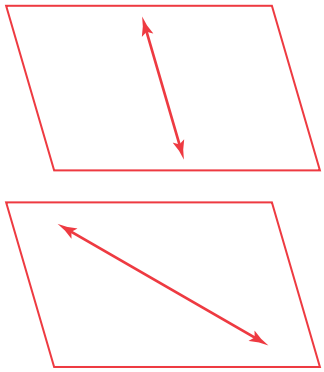
9. intersecting lines



10. perpendicular lines

11. coincidental lines

12. skew lines

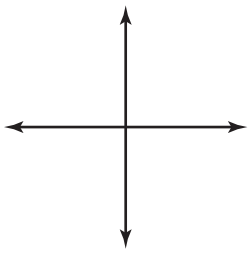


Choose the description from the box that best describes each sketch.

Case 1: Two or more coplanar lines intersect at a single point.
Case 2: Two or more coplanar lines intersect at an infinite number of points.
Case 3: Two or more coplanar lines do not intersect.
Case 4: Two or more are not coplanar.

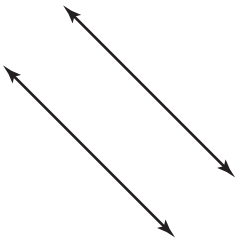
13.

Case 2

14. 

Case 1

15.

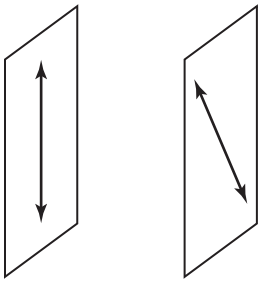


Case 3

16.

Case 1

17.



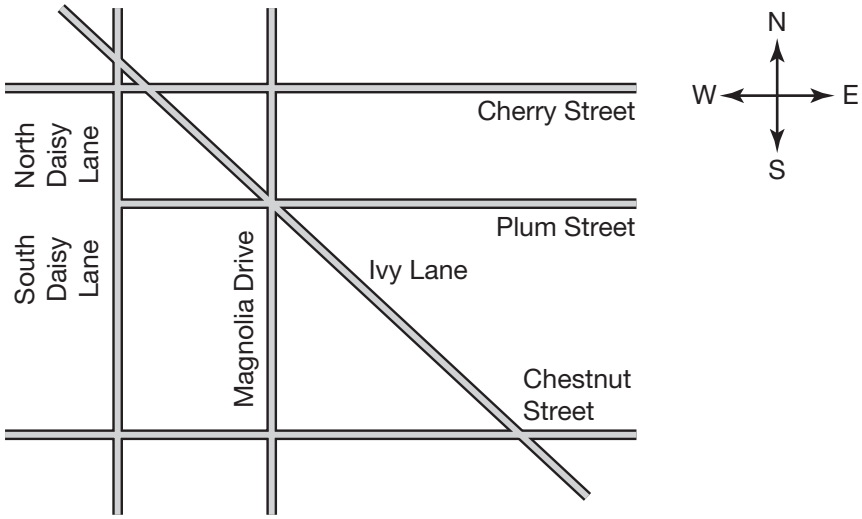
Case 4

18.

Case 3

NAME _____ DATE _____

Use the map to give an example of each relationship.



19. intersecting lines

Answers will vary.

Ivy Lane and Plum Street

20. perpendicular lines

Answers will vary.

Magnolia Drive and Cherry Street

21. parallel lines

Answers will vary.

Cherry Street and Chestnut Street

22. skew lines

None. All streets are in the same plane.

23. coincidental lines

North Daisy Lane and South Daisy Lane

24. coplanar lines

Answers will vary.

All streets are in the same plane.

10

NAME _____ DATE _____

When Lines Come Together

Angle Relationships Formed by Two Intersecting Lines

Vocabulary

Match each definition to its corresponding term.

1. Two adjacent angles that form a straight line

   b. linear pair of angles

2. Two angles whose sum is 180 degrees

   a. supplementary angles

a. supplementary angles

b. linear pair of angles

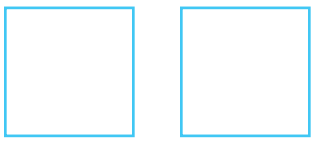
10

Problem Set

Sketch an example of each relationship.

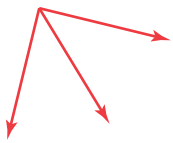
Answers will vary.

1. congruent figures

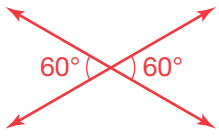


2. congruent angles

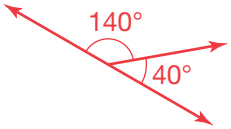
3. adjacent angles



4. vertical angles



5. linear pair

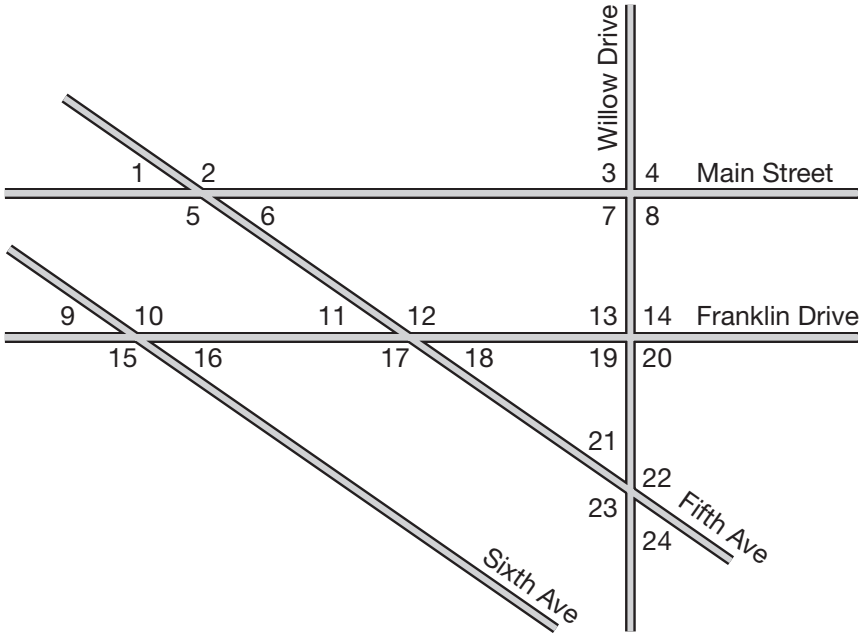


6. supplementary angles

10

Use the map to give an example of each relationship.

Answers will vary.



7. congruent angles

∠3 and ∠4

8. vertical angles

∠2 and ∠5

9. supplementary angles

∠9 and ∠10

10. linear pair

∠11 and ∠12

11. adjacent angles

∠17 and ∠18

12. vertical angles

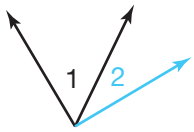
∠12 and ∠17

NAME _____ DATE _____

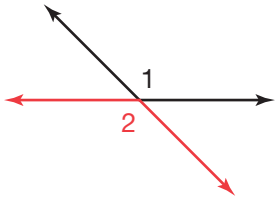
Complete each sketch.

Answers may vary.

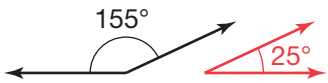
13. Draw ∠2 adjacent to ∠1.



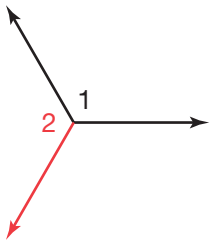
14. Draw ∠2 such that it forms a vertical angle with ∠1.



15. Draw ∠2 such that it supplements ∠1 and does not share a common side.



16. Draw ∠2 adjacent to ∠1.



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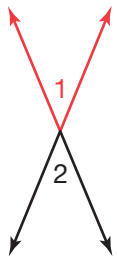
17. Draw ∠1 such that it forms a vertical angle with ∠2.



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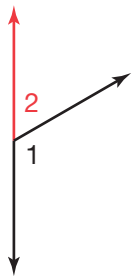
18. Draw ∠2 such that it forms a linear pair with ∠1.



Determine each unknown angle measure.

19. If ∠1 and ∠2 form a linear pair and $m\angle 1 = 42°$, what is $m\angle 2$?

$m\angle 1 + m\angle 2 = 180$

$42 + x = 180$

$x = 138$

$m\angle 2 = 138°$

NAME _____ DATE _____

20. If $\angle 1$ and $\angle 2$ are supplementary angles and $m\angle 1 = 101°$, what is $m\angle 2$?

$m\angle 1 + m\angle 2 = 180$

$101 + x = 180$

$x = 79$

$m\angle 2 = 79°$

21. If $\angle 1$ and $\angle 2$ form a linear pair and $m\angle 1$ is one-fifth $m\angle 2$, what is the measure of each angle?

$m\angle 1 + m\angle 2 = 180$

$0.2x + x = 180$

$1.2x = 180$

$x = 150$ and $0.2x = 0.2(150) = 30$

$m\angle 2 = 150°$ and $m\angle 1 = 30°$

22. If $\angle 1$ and $\angle 2$ are supplementary angles and $m\angle 1$ is 60° less than $m\angle 2$, what is the measure of each angle?

$m\angle 1 + m\angle 2 = 180$

$(x - 60) + x = 180$

$2x = 240$

$x = 120$ and $x - 60 = 120 - 60 = 60$

$m\angle 2 = 120°$ and $m\angle 1 = 60°$

23. If $\angle 1$ and $\angle 2$ form a linear pair and $m\angle 1$ is three times $m\angle 2$, what is the measure of each angle?

$m\angle 1 + m\angle 2 = 180$

$3x + x = 180$

$4x = 180$

$x = 45$ and $3x = 3(45) = 135$

$m\angle 2 = 45°$ and $m\angle 1 = 135°$

10

24. If $\angle 1$ and $\angle 2$ are supplementary angles and $m\angle 1$ is 12° more than $m\angle 2$, what is the measure of each angle?

$m\angle 1 + m\angle 2 = 180$

$(x + 12) + x = 180$

$2x = 168$

$x = 84$ and $x + 12 = 84 + 12 = 96$

$m\angle 2 = 84°$ and $m\angle 1 = 96°$