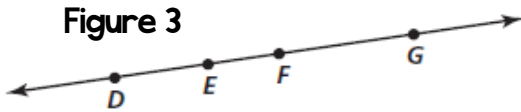
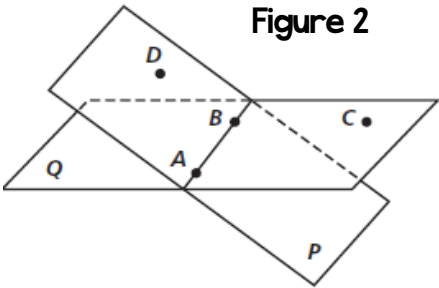
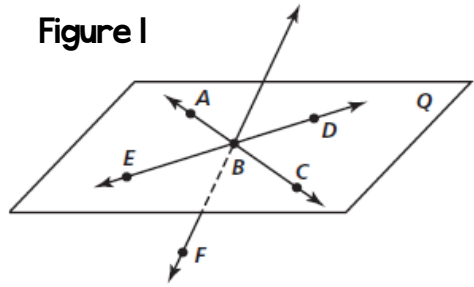


Section I.I: Geometry Definitions and Notation



Refer to figure 1 for questions 1 - 3.

1. Name $\overleftrightarrow{AB}$ in another way.
2. Give two other names for plane Q.
3. Why is $\overleftrightarrow{EBD}$ not an acceptable name for plane Q?

Refer to figure 2 to answer questions 4 - 6.

4. Name plane P in another way.
5. Name plane Q in another way.
6. Is $\overleftrightarrow{AB}$ an acceptable name for plane P?

Use figure 3 to answer questions 7 - 12.

7. Name $\overrightarrow{EF}$ in another way.
8. How many different segments can be named?
9. Name $\overleftrightarrow{GF}$ in two other ways.
10. Name a pair of opposite rays with E as an endpoint.
11. Are $\overline{EG}$ and $\overline{GE}$ the same segment?
12. Name in two different ways the ray opposite $\overrightarrow{FG}$.

Is each statement true or false? Why? (drawing a diagram can help!)

13. $\overleftrightarrow{XY}$ is the same as $\overleftrightarrow{YX}$.
14. $\overleftrightarrow{XY}$ is the same as $\overleftrightarrow{YX}$.
15. If two rays have the same endpoint, then they form a line.
16. If the union of two rays is a line, then the rays are opposite rays.
17. If $\overrightarrow{PQ}$ and $\overrightarrow{PR}$ are the same rays, then Q and R are the same point.

Match each term with the corresponding diagram and name.

18. Ray _____
19. Segment _____
20. Opposite rays _____
21. Point _____
22. Line _____
23. Plane _____
- A. $\overleftrightarrow{AB}$
- B. $\overline{ABC}$
- C. $\overleftrightarrow{AB}$
- D. $\overrightarrow{AB}$
- E. $\overrightarrow{AB}$ and $\overrightarrow{AC}$
- F. A
- I.
- II.
- III.
- IV.
- V.
- VI.

REVIEW: Solve each equation.

1. $3x - 2 = 5(x - 5)$
2. $-4x + 7 = 6x - 23$
3. $-7x + 2(3x - 1) = -16 - x$

Section I.2: Intersection of Lines and Planes

Figure 1

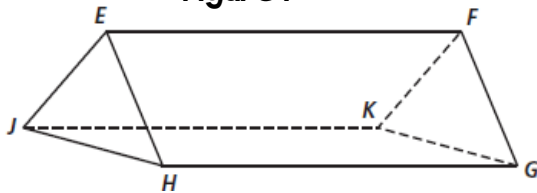


Figure 2

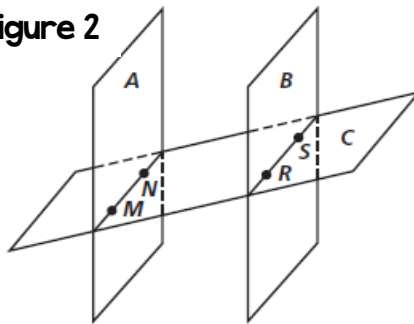
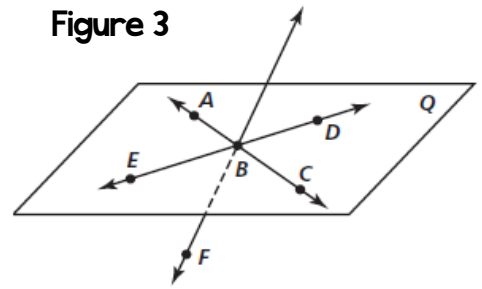


Figure 3



Use figure 1 to name each figure for questions 1 - 3.

1. all segments parallel to $\overline{EF}$ 2. all segments parallel to $\overline{FG}$ 3. three pairs of skew lines

Use figure 2 to answer questions 4 - 7.

4. Which pair(s) of planes is (are) parallel? 5. Which pair(s) of planes intersect?
6. Which planes intersect in $\overleftrightarrow{MN}$? 7. Which planes intersect in $\overleftrightarrow{RS}$?

Use figure 3 to answer questions 8 - 19.

Are the following sets of points and lines collinear? Why or why not?

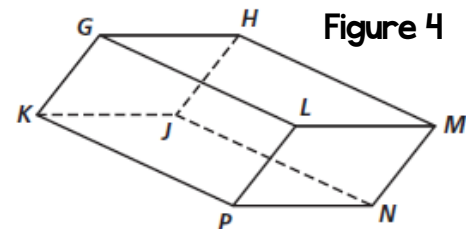
8. $\overleftrightarrow{AB}$ and C 9. $\overleftrightarrow{EB}$ and A 10. B and F 11. F and plane Q

Are the following sets of points and lines coplanar?

12. E, B, and F 13. $\overleftrightarrow{AC}$ and $\overleftrightarrow{ED}$ 14. F, A, B, and C 15. Plane Q and EC
16. $\overleftrightarrow{DB}$ and $\overleftrightarrow{FC}$ 17. $\overleftrightarrow{AE}$ and $\overleftrightarrow{DC}$ 18. F, A, B, and D 19. $\overleftrightarrow{FB}$ and $\overleftrightarrow{BD}$

Find the intersection of the following lines and planes in figure 4.

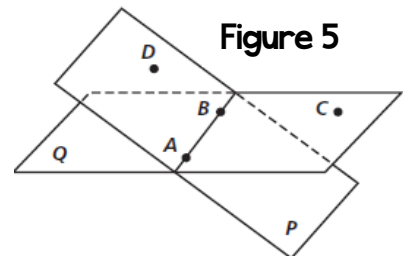
20. $\overline{GK}$ and $\overline{LG}$ 21. Planes GLM and LPN 22. Planes GHPN and KJP
23. Planes HJN and GKL 24. $\overline{KP}$ and plane KJN 25. $\overline{KM}$ and plane GHL



Refer to figure 5 to answer questions 26 - 33.

26. Are A and C collinear? 27. What is the intersection of planes P and Q?
28. Are D, A, B, and C coplanar? 29. Are D and C collinear?
30. What is the intersection of $\overleftrightarrow{AB}$ and $\overleftrightarrow{DC}$? 31. Are planes P and Q coplanar?
32. Are $\overleftrightarrow{AB}$ and plane Q coplanar? 33. Are B and C collinear?

Figure 5



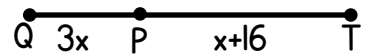
REVIEW: Simplify.

1. $3\frac{1}{4} + 2\frac{2}{3}$ 2. $7\frac{7}{8} - 2\frac{2}{3}$ 3. $4\frac{1}{2} + 3\frac{1}{4}$ 4. $6\frac{3}{8} - 3\frac{2}{3}$

Section I.3: Measuring Segments and Angles

Use the figure to the right to find the value of each of the following if $QT = 48$.

1. x
2. QP
3. PT
4. If P was the midpoint of QT , what would the value of x be?



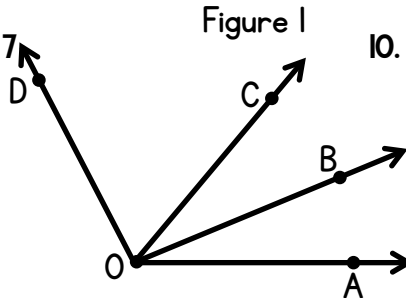
Use the figure to the right to find the value of each of the following if $AB = 27$.

5. y
6. AP
7. PB
8. If P was the midpoint of AB , what would the value of y be?



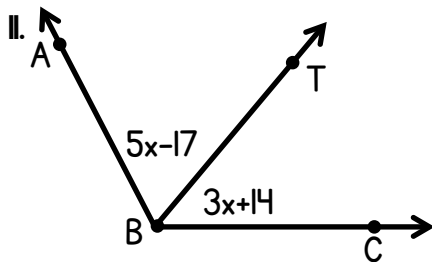
Use Figure I for questions 9 - 10. Solve for x and find the angle measures. (Remember that pictures do not have to be to scale!)

9. $\angle AOB = x + 3$, $\angle AOC = 2x + 11$, $\angle BOC = 4x - 7$

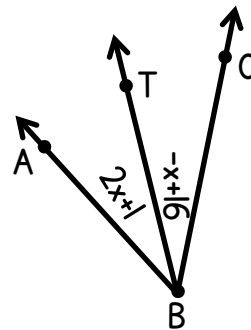


10. $\angle COD = 9x + 4$, $\angle BOC = 4x - 1$, $\angle BOD = 14x - 6$

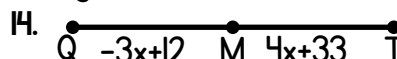
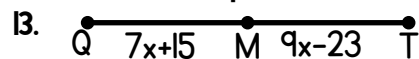
11. $\overrightarrow{BT}$ bisects $\angle ABC$. Find the value of x .



12.



Point M is a midpoint on QT . Find the value of x and the length of QT .



Let Q be in the interior of $\angle POR$. Use the angle addition postulate to solve for x . Find the measure of each angle.

15. $m\angle POQ = (x + 4)^\circ$
 $m\angle QOR = (2x - 2)^\circ$
 $m\angle POR = 26^\circ$

16. $m\angle POQ = (3x + 7)^\circ$
 $m\angle QOR = (5x - 2)^\circ$
 $m\angle POR = 61^\circ$

REVIEW: Simplify.

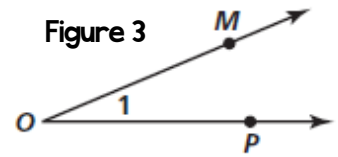
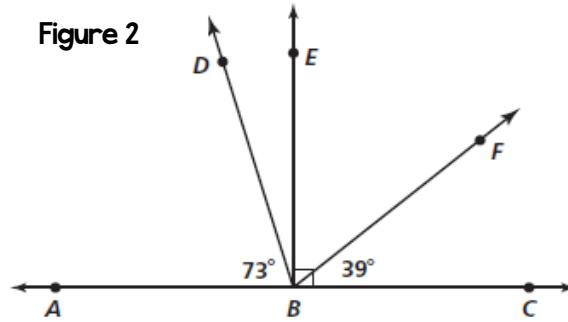
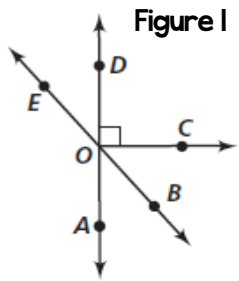
1. $3/4 \cdot 7/9$

2. $9/2 \div 6/5$

3. $3\frac{4}{5} \cdot 5\frac{2}{3}$

4. $4\frac{1}{3} \div 2\frac{1}{2}$

Section I.4: Types of Angle Pairs



Name an angle or angles in figure 1 described by each of the following.

1. Complementary to $\angle BOC$

2. Supplementary to $\angle BOC$

3. Vertical to $\angle EOD$

4. Congruent to $\angle AOD$

5. Adjacent and congruent to $\angle AOC$

Use figure 2 for questions 6 - 14. Find the measure of each angle for question 6 - 11.

6. $\angle EBF$

7. $\angle EBA$

8. $\angle DBE$

9. $\angle DBC$

10. $\angle ABF$

11. $\angle DBF$

12. Name all acute angles

13. Name all obtuse angles

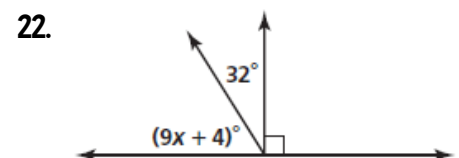
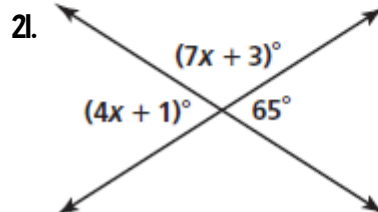
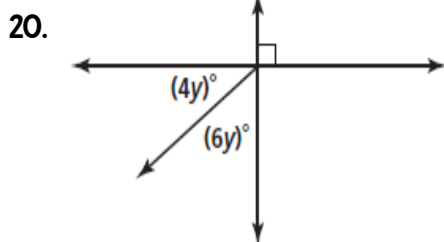
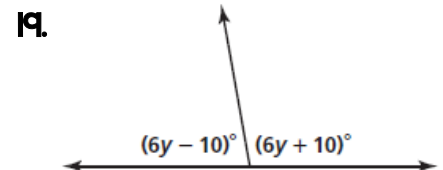
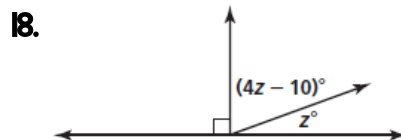
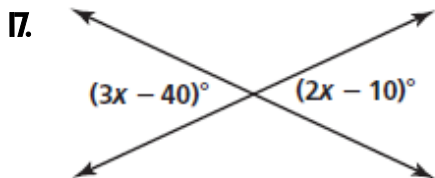
14. Name all right angles

Use figure 3 to answer questions 15 - 16.

15. Name the angle in four different ways.

16. What type of angle is shown?

Find the value of the variables.



REVIEW: Let $x = 3$, $y = -4$, and $z = 2$. Evaluate each expression.

1. $3xy^2$

2. xy/z

3. $\frac{1}{2}xz$

4. $2xy + 2xz + 2yz$

Section I.5: Introduction to Proofs

Use the given property to complete each statement.

I. Reflexive Property of Congruence $JL \cong ?$

2. Division Property of Equality If $4m\angle QWR = 120$, then ?.

3. Addition Property of Equality If $y - 15 = 36$, then ?

4. Symmetric Property of Equality If $MN = UT$, then ?.

5. Transitive Property of Equality If $SB = VT$ and $VT = MN$, then ?.

Name the property that justifies each statement.

6. If $m\angle G = 35$ and $m\angle S = 35$, then $m\angle G \cong m\angle S$.

7. If $10x + 6y = 14$ and $x = 2y$, then $10(2y) + 6y = 14$.

8. If $TR = MN$ and $MN = VW$, then $TR = VW$.

9. If $JK \cong LM$, then $LM \cong JK$.

10. If $\angle Q \cong \angle S$ and $\angle S \cong \angle P$, then $\angle Q \cong \angle P$.

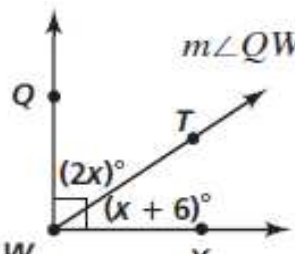
11. If $a = 5$, then $5 = a$.

Give a reason for each step.

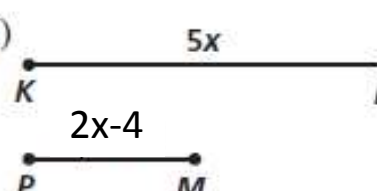
$$\begin{aligned} 12. \quad 7x - 4 &= 10 + 5x \\ 7x &= 14 + 5x \\ 2x &= 14 \\ x &= 7 \end{aligned}$$

$$\begin{aligned} 13. \quad 3(x - 2) + 5 &= 14 \\ 3x - 6 + 5 &= 14 \\ 3x - 1 &= 14 \\ 3x &= 15 \\ x &= 5 \end{aligned}$$

Fill in the missing information. Solve for x and justify each step.

14. 

$$\begin{aligned} m\angle QWT + m\angle TWX &= 90 \\ 2x + (x + 6) &= ? \\ ? + 6 &= 90 \\ ? &= ? \\ x &= ? \end{aligned}$$

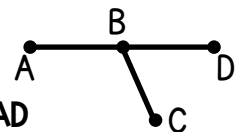
15. 

$$\begin{aligned} 15. \quad KL &= 3(PM) \\ 5x &= 3(?) \\ 5x &= ? \\ ? &= -12 \\ x &= ? \end{aligned}$$

16. GIVEN: $\overline{PQ} \cong \overline{QS}$ and $\overline{QS} \cong \overline{ST}$
PROVE: $PQ = ST$

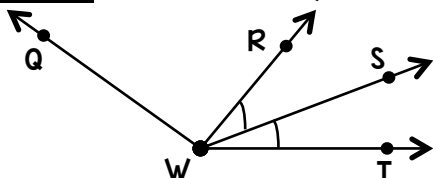
Statements	Reasons
1. $\overline{PQ} \cong \overline{QS}$	1.
2. $\overline{QS} \cong \overline{ST}$	2.
3. $\overline{PQ} \cong \overline{ST}$	3.
4. $PQ = ST$	4.

17. GIVEN: $AB = BC$ and $BC = BD$
PROVE: B is the midpoint of AD



Statements	Reasons
1.	1. Given
2. $BC = BD$	2.
3.	3. Transitive property
4.	4. Definition of congruence
5. B is the midpoint of AD	5.

REVIEW: $\angle RWS = 9x + 1$, $\angle RWT = 4(5x - 1)$, $\angle QWT = 136^\circ$



- Find $m\angle RWS$
- Find $m\angle SWT$
- Find $m\angle RWT$
- Find $m\angle QWR$

Choose the correct term to complete each sentence.

1. A ray that divides an angle into two congruent angles is a(n) _____.
2. _____ are two lines that intersect to form right angles.
3. _____ are two angles with measures that have a sum of 90.
4. Figures that are in the same plane are _____.
5. A(n) _____ is the part of a line consisting of two endpoints and all points between them.
6. Two segments with the same length are _____.
7. A(n) _____ of a segment is a point that divides the segment into two congruent segments.
8. A(n) _____ is a ray that divides an angle into two congruent angles.
9. _____ are coplanar lines that do not intersect.
10. A(n) _____ is an angle whose measure is between 90 and 180.

Figure 1

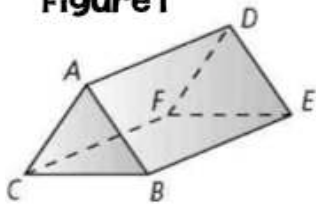


Figure 2

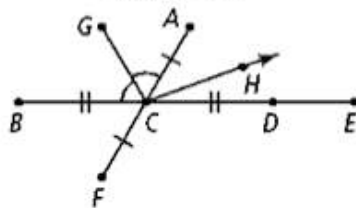


Figure 3

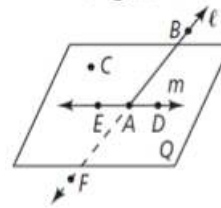
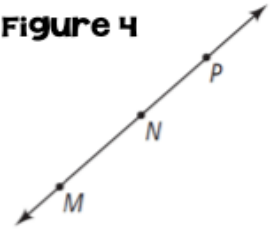


Figure 4



Using figure 1, decide if each statement is true or false.

11. A, D, F are coplanar.
12. A, B, E are coplanar.
13. A and C are collinear.
14. $\overleftrightarrow{AC}$ and $\overleftrightarrow{FE}$ are coplanar.
15. D, A, B, E are coplanar.
16. D, E, and B are collinear.

Use the figure 2 for exercises 17 - 22.

17. If $BC = 12$ and $CE = 15$, find BE.
18. What is the angle bisector of $\angle ACB$?
19. $BC = 3x + 2$ and $CD = 5x - 10$. Solve for x.
20. If $AC = 5x - 16$ and $CF = 2x - 4$, find AF.
21. If $m\angle BCG = 60$ then find $m\angle GCA$ and $m\angle BCA$.
22. If $m\angle ACD = 60$ and $m\angle DCH = 20$, then find $m\angle HCA$.

Use the figure 3 for exercises 23 - 26.

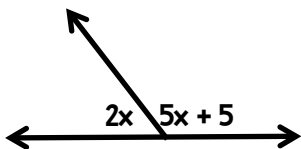
23. What are two other ways to name $\overleftrightarrow{AB}$?
24. What are two ways to name plane Q?
25. What are the names of three collinear points?
26. What are the names of four coplanar points?

Use the figure 4 for questions 27 - 29.

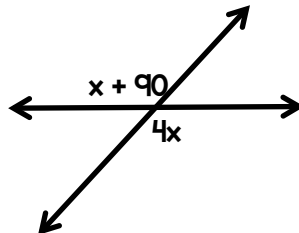
27. What are the names of the segments?
28. What are the names of the rays in the picture?
29. Which of the rays are opposite rays?

Solve for each variable.

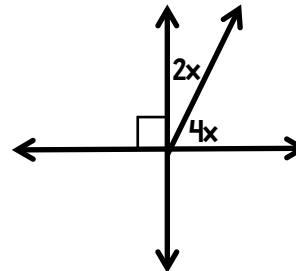
30.



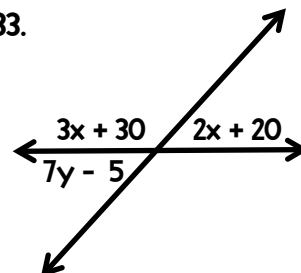
31.



32.

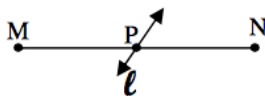


33.



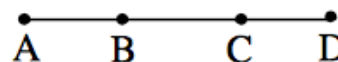
Complete each proof.

34. Given: Line ℓ bisects $\overline{MN}$ at P. Prove: $MP = PN$.



HINT: It will take 3 steps!

35. Given: $AB = CD$. Prove: $AC = BD$



HINT: It will take 5 steps!

Identify which property is being shown.

36. If $AB = BC$, then $BC = AB$
37. If $h = k$ and $k = g$, then $h = g$.
38. If $3x - 5 = 13$, then $3x = 18$.
39. If $a = 2$, then $2 = a$.
40. If $a = a$, then $a = a$.
41. If $a = 3$, then $3a = 9$.