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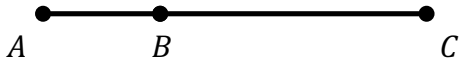
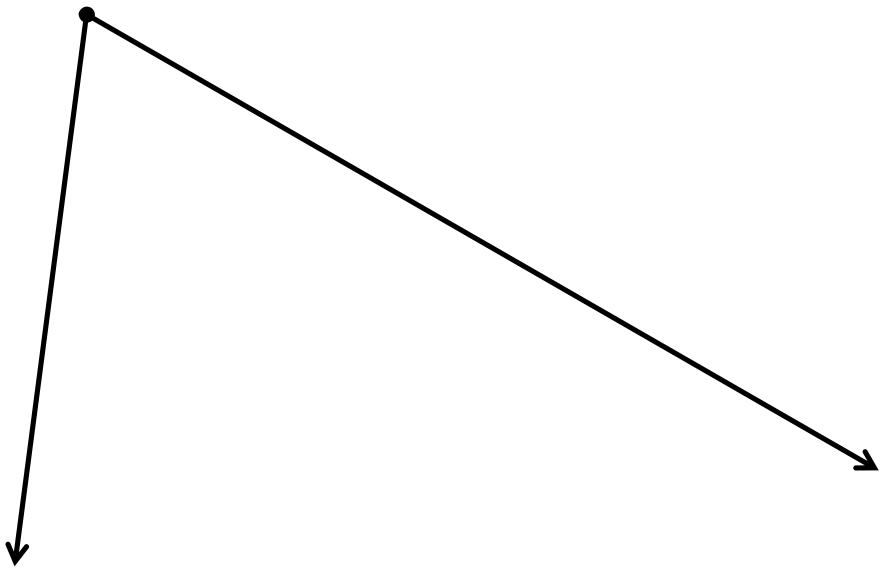
Final Exam
Constructions

1. Construct an equilateral triangle with side $\overline{AC}$ using a compass and straight edge. (3 points)



2. Construct an angle bisector of the given angle. (3 points)



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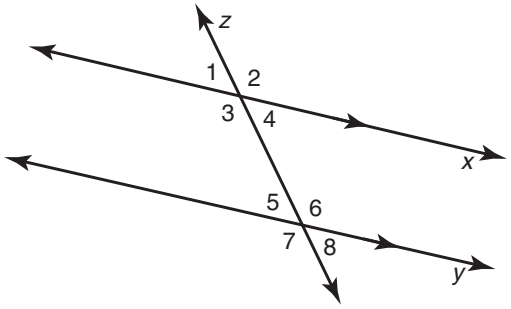
3. The measure of angle *T* is 70°.
a. What is the measure of an angle that is complementary to angle *T*? (1 point)

b. What is the measure of an angle that is supplementary to angle *T*? (1 point)

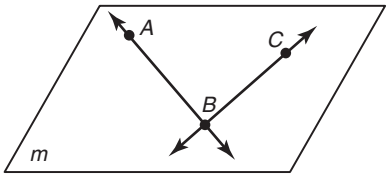
4. True or false: If *M* is the midpoint of $\overline{AB}$, then $\frac{1}{2}AB = AM.$ (1 point)

5. In the figure, line *x* is parallel to line *y* and $m\angle 1 = 40$. Determine the measure of angle 8. (1 point)



6. . In the figure, given that $\overline{AB} \cong \overline{BC}$, *AB* = 13*x* + 9, *BC* = 35. Solve for *x, AB,* and *BC.* Show each step.

State an equation (1 pt):



x = (1 pt)

AB = (1 pt)

BC = (1 pt)

Check (1 pt):

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7. Write the letter of the description in front of each term. (1 point each)

i.	_____	obtuse angle	**a.** two angles whose measures add up to 90°
ii.	_____	complementary angles	**b.** two nonadjacent angles that are formed by two intersecting lines
iii.	_____	adjacent angles	**c.** two angles whose measures add up to 180°
iv.	_____	vertical angles	**d.** an angle whose measure is greater than 90° but less than 180°
v.	_____	supplementary angles	**e.** two angles that share a common vertex and a common side

(*for credit, you must write the correct letters in the blanks*)

8. $\angle ABC$ and $\angle DEF$ are supplementary angles. $m\angle ABC = 3x - 20$, and $m\angle DEF = 2x + 10$. Find x and the measure of each angle.

$x =$

$m\angle ABC =$

$m\angle DEF =$

9. (1 point)

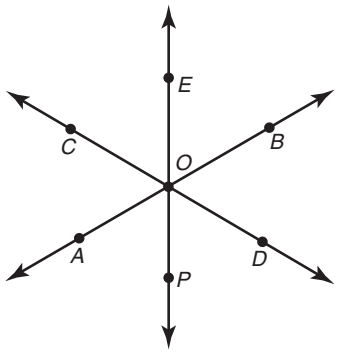
The figure shows intersecting lines. Which choice shows vertical angles?

a. $\angle COE$ and $\angle BOD$

b. $\angle COE$ and $\angle EOD$

c. $\angle EOB$ and $\angle AOP$

d. $\angle AOC$ and $\angle COE$



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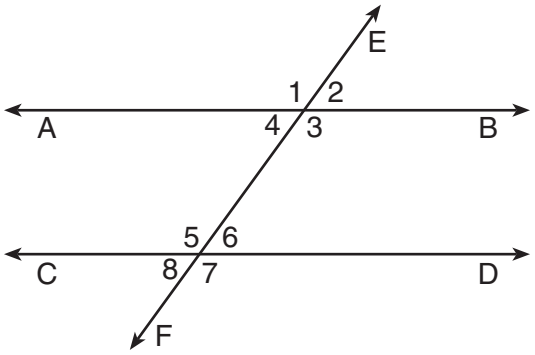
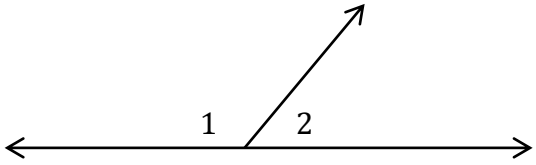
10. Given the diagram at right. (1 point each)
a. As a pair, $\angle 4$ and $\angle 2$ are called what kind of angles?

b. $\angle 1$ and $\angle 8$ have what relationship?

c. What would you call the angle pair $\angle 6$ and $\angle 4$?



11. . Given $m\angle 1 = 10x + 40, m\angle 2 = 2x + 20$ as shown in the figure. Solve for *x* and the measures of the two angles. Show the steps and check your result.



$x =$

$m\angle 1 =$

$m\angle 2 =$

12. $\overline{DG}$ has endpoints $D(-1, 6)$ and $G(1, -4)$. What are the coordinates of its midpoint? (1 point)

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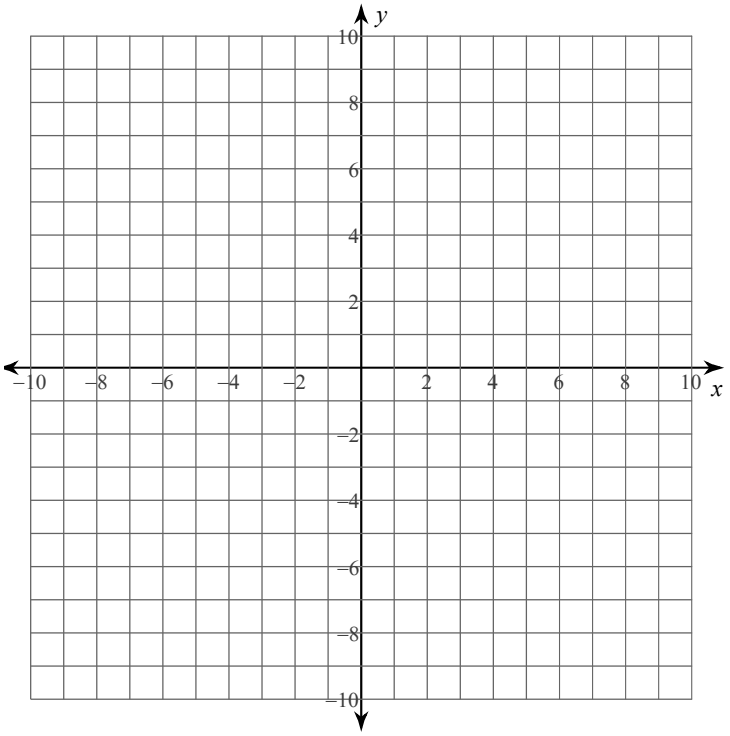
13. Given the points $A(-3, -7)$ and $B(3, 1)$.

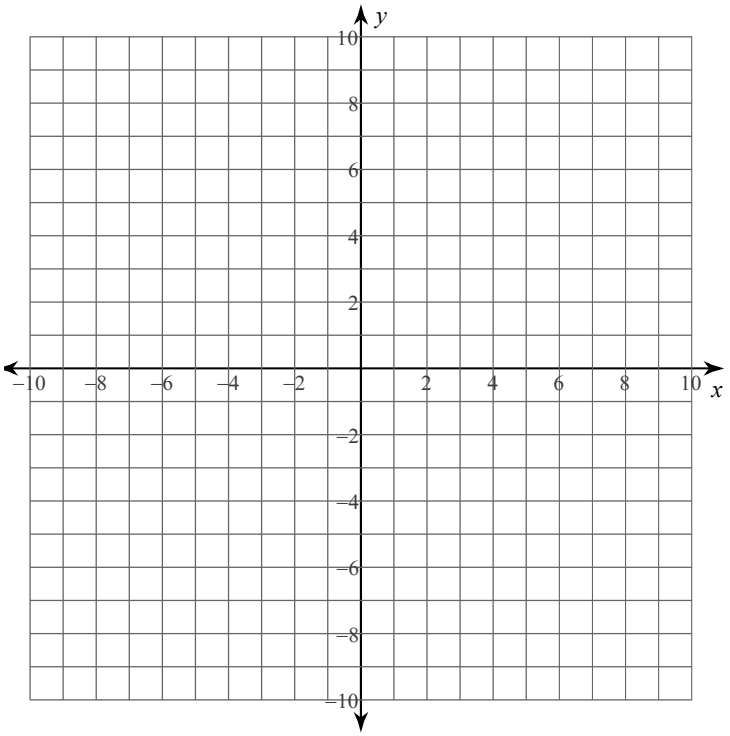
a. Plot and label the points and line segment $\overline{AB}$ on the graph.

b. What is the length AB. Show your calculation.



14. Plot and label line segment $\overline{AB}$ and its endpoints $A(-5, 4)$ and $B(7, -4)$.

b. What are the coordinates of the midpoint of $\overline{AB}$?



15. In simplified radical form, what is the distance between $L(-4, 3)$ and $Z(-10, 0)$? (2 points)

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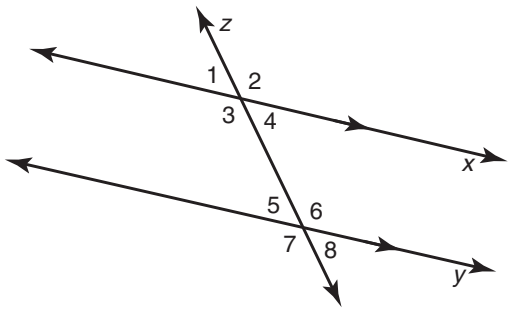
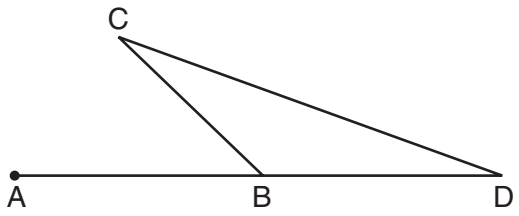
16. In the given diagram the lines $x \parallel y$, and $m\angle 1 = x + 25$ and $m\angle 5 = 60$.
Solve for x (2 points)



17.

In the diagram below of $\triangle BCD$, side $\overline{DB}$ is extended to point A. Given $m\angle ABC = 40$. What is $m\angle CBD$? (1 point)



18. (1 point)

Which equation represents a line that is perpendicular to the line represented by $2x - y = 7$?

(1) $y = -\frac{1}{2}x + 6$
(2) $y = \frac{1}{2}x + 6$
(3) $y = -2x + 6$
(4) $y = 2x + 6$

19. (1 point)

Which equation represents a line that passes through the point $(-2,6)$ and is parallel to the line whose equation is $3x - 4y = 6$?

(1) $3x + 4y = 18$
(2) $4x + 3y = 10$
(3) $-3x + 4y = 30$
(4) $-4x + 3y = 26$

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Use the given information to find the equation of the line. *You may use point-slope or slope-intercept form.*

20. The line has a slope of –3 and passes through (0, 5). (1 point)

21. The line passes through points (3, –1) and (–3, 5). (1 point)

Determine whether the pairs of lines is *parallel, perpendicular,* or *neither.* (1 point)

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

$3x + y = 2$

23. The measures of two interior angles of a triangle are 100 degrees and 35 degrees. What is the measure of the third angle? (1 point)

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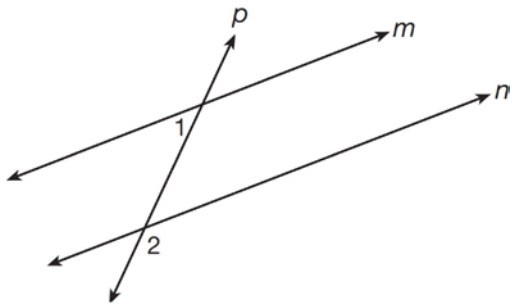
24.

As shown in the diagram below, lines *m* and *n* are cut by transversal *p*.



Given $m\angle 1 = 48$. What must be true for lines *m* and *n* to be parallel? (1 point)

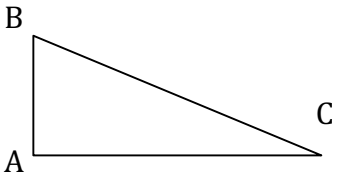
(1) $m\angle 1 + m\angle 2 = 180$

(2) $\angle 1 \cong \angle 2$

(3) $\angle 1$ & $\angle 2$ are complementary

(4) $\angle 1$ & $\angle 2$ are vertical angles

25. Right triangle *ABC* shown at right. $\overline{AB} \perp \overline{AC}$ and $m\angle B = 65$. What is the measure of angle C? (1 point)



(1) 155

(2) 145

(3) 25

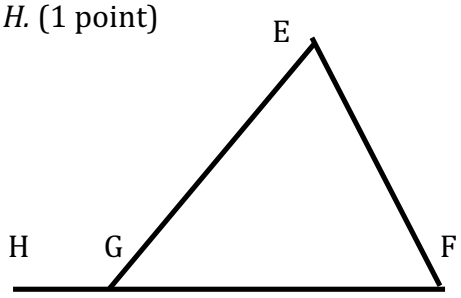
(4) 65

26. In the diagram of $\triangle EFG$ at right, $\overline{FG}$ is extended through *H.* (1 point)

$m\angle E = 50$

$m\angle EGH = 115$

$m\angle F = ?$



(1) 165

(2) 65

(3) 15

(4) 50

27. $\triangle ABC$ with the given angle measures. Solve for *x.* (2 points)

$m\angle A = 40$

$m\angle B = x - 20$

$m\angle C = 2x + 10$