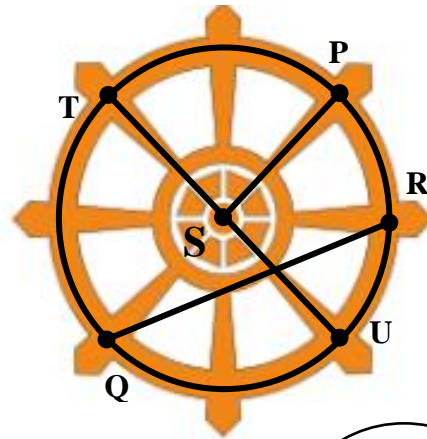


UNIT 1 – ACTIVITIES 1 – 8

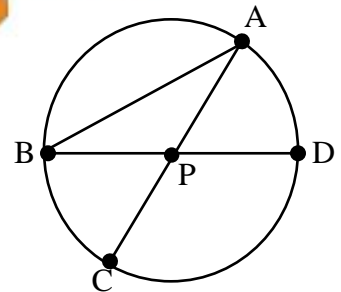
1. Use circle S to identify the following:

- a. Chord:
- b. Diameter:
- c. Radius:
- d. Center:



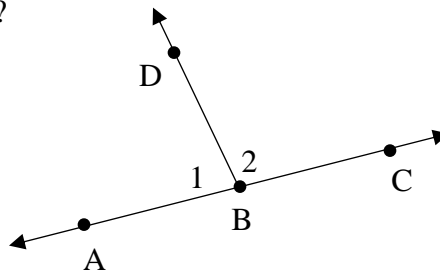
2. Use circle P at the right to answer parts a – d.

- a. How many radii are shown? Name them.
- b. How many diameters are shown? Name them.
- c. How is a chord similar to a diameter? How is a chord different from a diameter?
- d. How is a radius different than a diameter?



_____ 3. Which is another name for $\angle 2$?

- A. $\angle B$
- B. $\angle ABD$
- C. $\angle BCD$
- D. $\angle DBC$

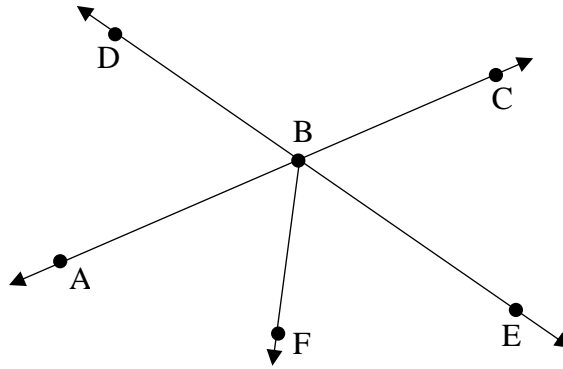


_____ 4. Suppose point D is in the interior $\angle ABC$, $m\angle ABC = 12x - 110$, $m\angle ABD = 3x + 40$, and $m\angle DBC = 2x - 10$. What is $m\angle ABC$?

- A. 20°
- B. 30°
- C. 100°
- D. 130°

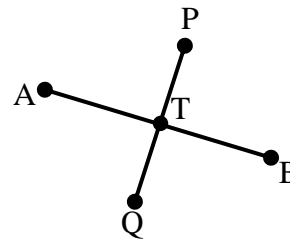
5. Which angle pairs in the figure are adjacent and supplementary? **Check all that apply.**

- _____ $\angle DBC$ and $\angle CBE$
- _____ $\angle ABD$ and $\angle CBE$
- _____ $\angle ABF$ and $\angle FBE$
- _____ $\angle ABD$ and $\angle DBC$
- _____ $\angle CBE$ and $\angle EBA$



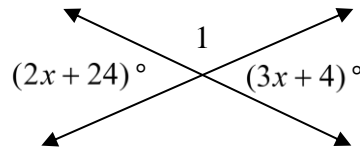
_____ 6. In the diagram shown, $AB \perp PQ$. If $PT = TQ$, which statement is true?

- A. $AT = TB$
- B. \overline{PQ} is the perpendicular bisector of \overline{AB}
- C. \overline{AB} is the perpendicular bisector of \overline{PQ}
- D. \overline{PT} is the perpendicular bisector of \overline{AB}



_____ 7. Find the measure of $m\angle 1$.

- A. 30.4
- B. 20
- C. 64
- D. 116



_____ 8. Alison states $\angle AMC + \angle CMD + \angle DMB = \angle AMB$. Which justifies Alison's statement?

- A. Angle Addition Postulate
- B. Segment Addition Postulate
- C. Construction of an Angle Bisector
- D. Construction of a Perpendicular Bisector

_____ 9. Suppose Q is the midpoint of \overline{PR} , $PQ = x + 10$, and $QR = 4x - 2$. What is the value of PR ?

- A. 4
- B. 8
- C. 14
- D. 28

_____ 10. Suppose the midpoint of \overline{RT} is $M(3, 0)$. If point R has the coordinates $(-1, 4)$, what are the coordinates of point T?

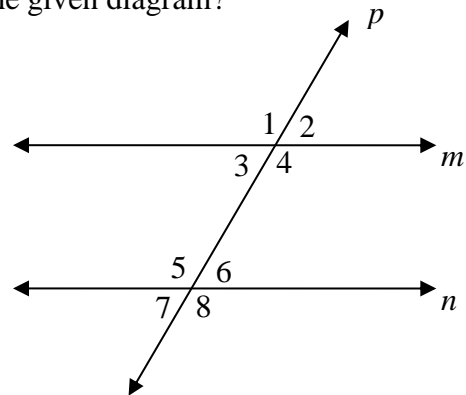
_____ 11. For \overline{AB} , point A has coordinates $(3, -5)$ and point B has coordinates $(-1, 9)$. What are the coordinates of the midpoint of \overline{AB} ?

_____ 12. Julie is given two points, $A(5, 4)$ and $B(3, -2)$. Find AB .

- A. 2.8
- B. 5.1
- C. 6.3
- D. 8

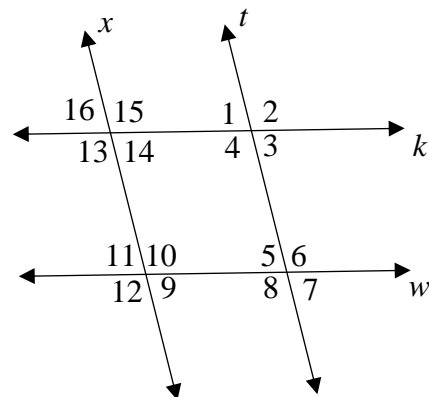
_____ 13. If $m \parallel n$, which pair of angles are congruent in the given diagram?

- A. $\angle 1$ and $\angle 6$
- B. $\angle 5$ and $\angle 7$
- C. $\angle 4$ and $\angle 3$
- D. $\angle 3$ and $\angle 6$



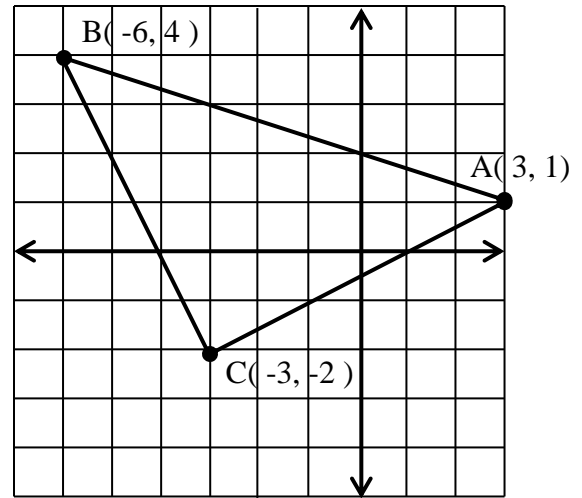
_____ 14. Billy is working on a proof given $x \parallel t$ and $k \parallel w$ as shown. He wants to write a statement that can be justified using only the Corresponding Angles Postulate. Which statement could he write?

- A. $\angle 2$ and $\angle 4$
- B. $\angle 2$ and $\angle 6$
- C. $\angle 2$ and $\angle 8$
- D. $\angle 2$ and $\angle 10$



_____ 15. How could you justify that $\triangle ABC$ is a right triangle?

- A. The slope of $\overline{BC} = -\frac{2}{1}$ and the slope of $\overline{BA} = -\frac{1}{3}$
- B. The slope of $\overline{CA} = \frac{1}{2}$ and the slope of $\overline{BA} = -\frac{1}{3}$
- C. The slope of $\overline{BC} = -\frac{2}{1}$ and the slope of $\overline{CA} = \frac{1}{2}$
- D. The slope of $\overline{BC} = -\frac{2}{1}$ and the slope of $\overline{BA} = -\frac{1}{3}$

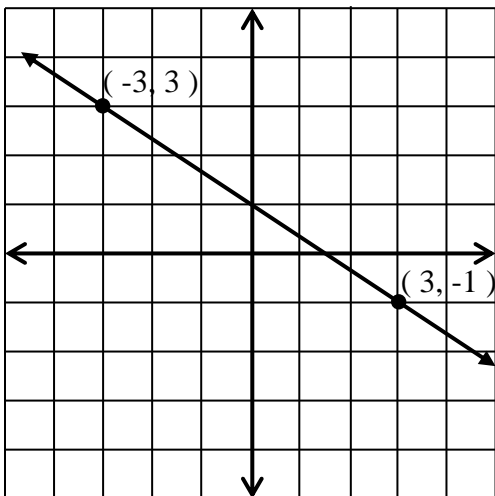


16. Write the equation in slope-intercept form of the line parallel to the line $5y + 2x = -25$ and passes through the point $(5, -3)$.

17. Write the equation in slope intercept form of the line that is parallel to the line $2x + y = 3$ and passes through the point $(-7, 9)$

18. Write the equation in slope-intercept form of the line perpendicular to the line $x + y = 2$ and passes through the point $(-5, 8)$

19. Write the equation in slope intercept form that represents a line perpendicular to the line shown on the graph through the same y-intercept.



_____ 20. Consider the conditional statement. What is the conclusion of the statement?

Conditional: If the sun is out, then we will go to the beach.

- A. the sun is
- B. if the sun is out
- C. we will go to the beach
- D. then we will go to the beach

21. Consider the conjectures shown. Which is a viable argument for these conjectures? **Check all that apply.**

Conjectures: If two angles are complementary, then both angles must be acute.
If two angles are acute, then their sum must be less than 180° .

_____ Given $\angle 1$ and $\angle 2$ are acute angles; therefore, they are complementary.

_____ Given $\angle 1$ and $\angle 2$ are acute angles; therefore, their sum is less than 180° .

_____ Given $\angle 1$ and $\angle 2$ are complementary; therefore, they are both acute angles.

_____ Given $\angle 1$ and $\angle 2$ are complementary; therefore, their sum is less than 180° .

_____ Given $\angle 1$ and $\angle 2$ have a sum less than 180° ; therefore, they are both acute angles.

_____ Given $\angle 1$ and $\angle 2$ have a sum less than 180° ; therefore, they are complementary.

_____ 22. Consider the conditional statement shown.

If a student plays the trumpet, then the student is in the school band.

Which is a counterexample to this conditional statement?

- A. A student can be in the band but not play the trumpet
- B. A student may not be in the band and not play the trumpet
- C. A student can play the trumpet but not be in the school band
- D. A student may not play the trumpet but still be in the school band

23. The distance between two points on a number line is 8 units. Point A is at 6. What are the possible location(s) for point B?

UNIT 2 – ACTIVITIES 9 – 16

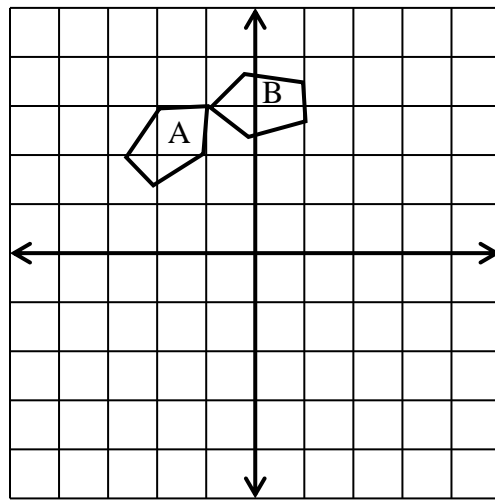
_____ 24. The table shows the vertices of $\triangle ABC$ and its image after a reflection. Which is the line of reflection and the missing coordinate?

- A. a reflection across the line $x = 3$; (6, 1)
- B. a reflection across the line $x = 7$; (3, 1)
- C. a reflection across the line $x = 10$; (3, 1)
- D. a reflection across the line $y = 3$; (6, 1)

	Pre – Image	Image
A	(-4, 3)	(10, 3)
B	(-2, 5)	(8, 5)
C	(0, 1)	_____

_____ 25. Pentagon A and its rotated image B are shown on the grid. What is the center of rotation?

- A. (0, 0)
- B. (3, -1)
- C. (-1, 3)
- D. (1, 3)



26. A translation of a rectangle under the transformation $(x, y) \rightarrow (x - 1, y + 3)$ is recorded in the table below. Fill in the corresponding table if the image is then moved an additional 3 units right and 2 units up.

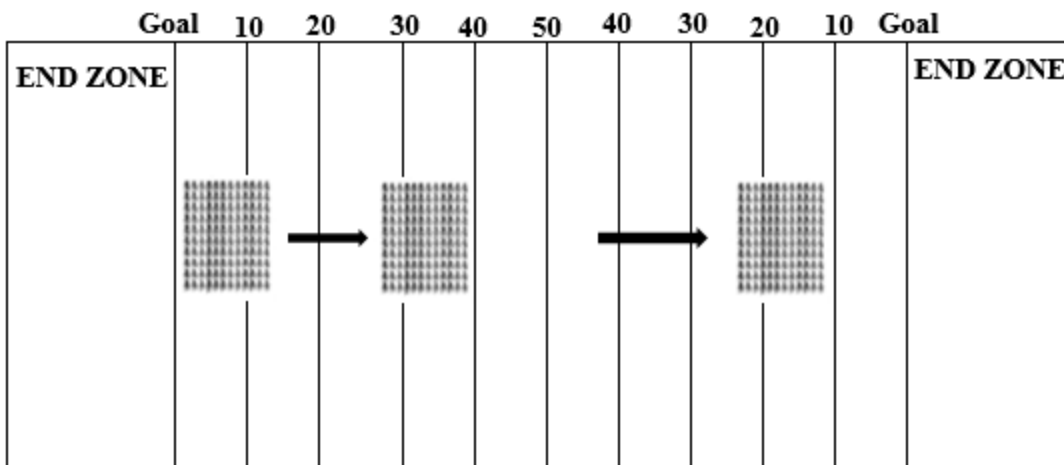
Point	Preimage	Original translation Image	Additional translation image
A	(2,-1)	(1,2)	
B	(2, -3)	(1, 0)	
C	(6,-1)	(5, 2)	
D	(6,-3)	(5, 0)	

_____ 27. A regular polygon has a rotational symmetry with an angle of 36° . Identify the polygon it is referring to.

28. Given the transformation recorded in the table below, state the transformation function that maps the preimage to image.

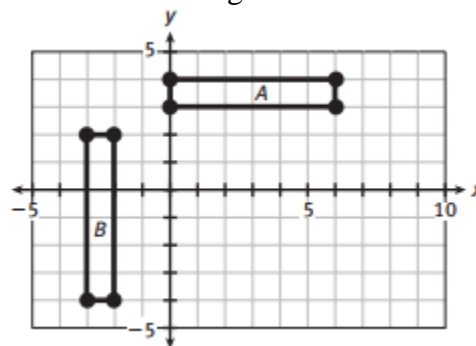
Point	Preimage	Original translation Image
A	(2,-1)	(9, -12)
B	(2, -3)	(9, -14)
C	(6,-1)	(13, -12)
D	(6,-3)	(13, -14)

29. The band is practicing a new rigid transformation halftime routine. What happens to the distance between each band member as they move?



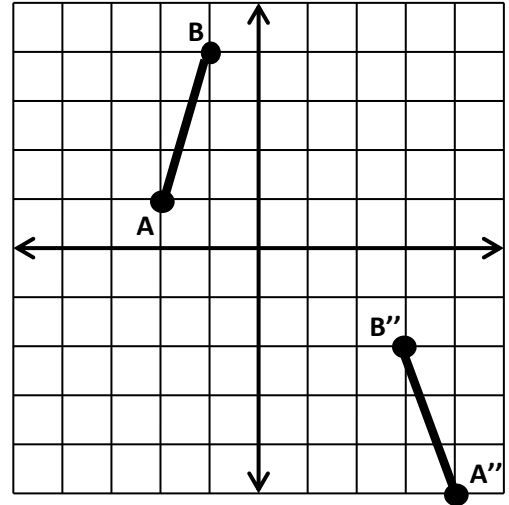
30. Which combination shows that rectangles A and B are congruent?

- A. $R_{(0,3),90^\circ}(T_{(-3,0)}(A))$
- B. $T_{(-2,-7)}, (R_{(0,3),90^\circ}(A))$
- C. $T_{(-2,-7)}, (R_{(0,3),90^\circ}(B))$
- D. $T_{(-2,-7)}, (R_{(0,3),-90^\circ}(A))$



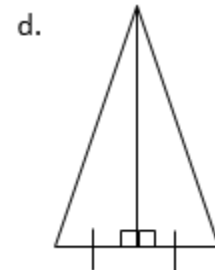
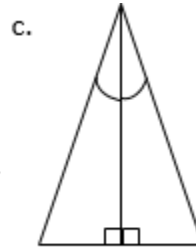
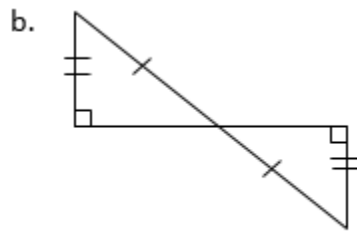
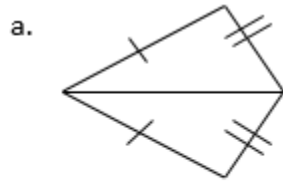
31. Which of the following shows the composition from \overline{AB} to $\overline{A''B''}$ and shows the segments are congruent?

- A. $r_{y=x}R_{(0,0),180^\circ}$
- B. $T_{(0,-6)}r_{x=1}$
- C. $T_{(6,0)}r_{y=1}$
- D. $r_{x=1}T_{(0,6)}$

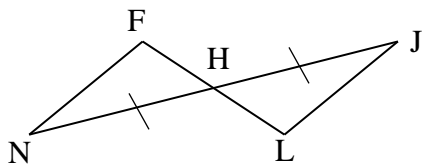


32. Suppose $\triangle QRS$ and $\triangle TUV$ are congruent right triangles such that $\angle R$ is a right angle and $\angle V = 35^\circ$. What is the measure of $\angle Q$?

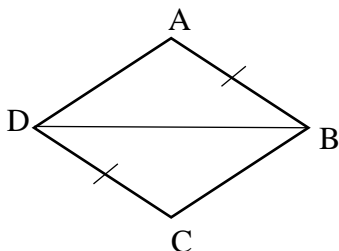
33. Given the information provided, name the method, if any, that can be used to prove the triangles congruent:



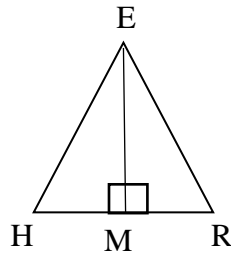
34. What additional information needs to be given to develop the proof that $\triangle FHN \cong \triangle LHJ$ by ASA congruence criteria?



35. What additional information needs to be given to develop the proof that $\triangle ABD \cong \triangle CDB$ by SAS congruence criteria?



36. What additional information needs to be given to develop the proof that $\triangle EMH \cong \triangle EMR$ by HL congruence criteria?



37. Which statements could be used in a proof with the reason CPCTC after proving $\triangle ABC \cong \triangle EFG$? Circle all that apply.

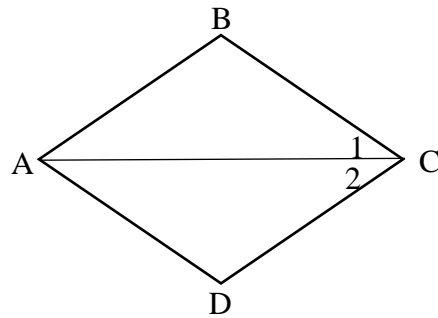
- A. $\overline{AC} \cong \overline{EG}$
- B. $\overline{AB} \parallel \overline{EF}$
- C. $\overline{BC} \cong \overline{FG}$
- D. $\angle BCA \cong \angle FGE$
- E. $\angle CBA \cong \angle GEF$

38. What are the ways to prove two triangles are congruent?

- _____ 39. Given two triangles with the properties shown.

What additional information needs to be marked to develop the proof that $\triangle ABC \cong \triangle ADC$ by the ASA congruence criteria?

- A. $\angle 1 \cong \angle 2$ and $\angle B \cong \angle D$
- B. $\overline{AB} \cong \overline{BC}$ and $\overline{AD} \cong \overline{CD}$
- C. $\angle 1 \cong \angle 2$ and $\angle BAC \cong \angle DAC$
- D. $\overline{CD} \cong \overline{BC}$ and $\overline{AB} \cong \overline{AD}$



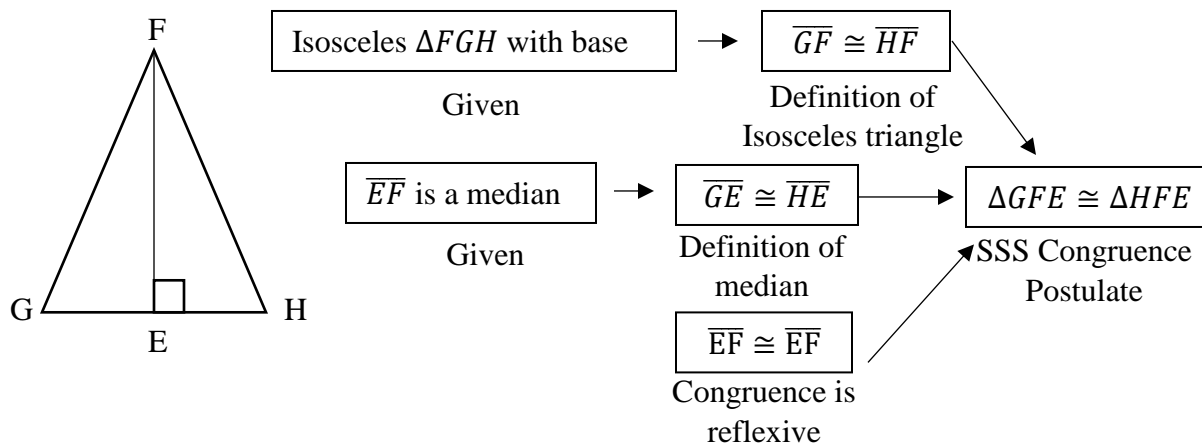
- _____ 40. $\triangle RST$ has angle measures given by $m\angle R = 9x + 29$, $m\angle S = 93 - 5x$, and $m\angle T = 10x + 2$. What is the measure of $\angle T$?

- _____ 41. The measure of an angle in an isosceles triangle is 98° . What are the measures of the other two angles?

42. Consider the flowchart proof and its corresponding two-column proof.

Given: Isosceles $\triangle FGH$ with base \overline{GH} and median \overline{EF} .

Prove: $\triangle GFE \cong \triangle HFE$



Statement	Reasons
1. Isosceles $\triangle FGH$ with base \overline{GH}	1. Given
2.	2. Definition of isosceles triangle
3. \overline{EF} is a median	3. Given
4.	4. Definition of median
5. $\overline{EF} \cong \overline{EF}$	5.
6. $\triangle GFE \cong \triangle HFE$	6. SSS Congruence Postulate

The two-column proof is rewritten from the flowchart proof. What are the missing statements and reasons in the two-column proof?

- A. 2. $\overline{GE} \cong \overline{HE}$; 4. $\overline{GF} \cong \overline{HF}$; 5. Given
- B. 2. $\overline{GF} \cong \overline{HF}$; 4. $\overline{GE} \cong \overline{HE}$; 5. Given
- C. 2. $\overline{GE} \cong \overline{HE}$; 4. $\overline{GF} \cong \overline{HF}$; 5. Congruence is reflexive
- D. 2. $\overline{GF} \cong \overline{HF}$; 4. $\overline{GE} \cong \overline{HE}$; 5. Congruence is reflexive

43. Suppose $\triangle ABC \cong \triangle LMN$, and the side lengths of $\triangle ABC$ are shown in the table below.

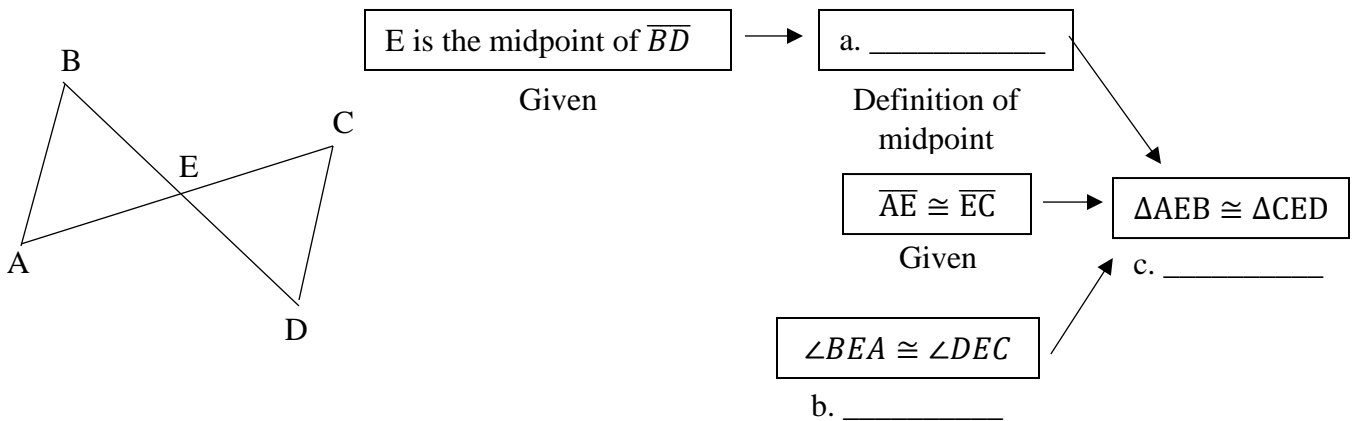
What is the longest side in $\triangle LMN$?

Side	Length (cm)
\overline{AB}	5.2
\overline{BC}	8.4
\overline{AC}	7.8

44. Consider the incomplete flowchart proof shown.

Given: E is the midpoint of \overline{BD} , and $\overline{AE} \cong \overline{EC}$

Prove: $\triangle AEB \cong \triangle CED$



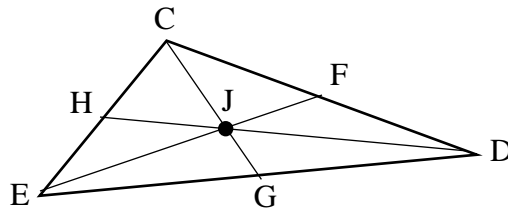
What are the missing parts of the flowchart proof?

- A. a. $\overline{BA} \cong \overline{DC}$; b. Definition of a midpoint; c. ASA Congruence Postulate
- B. a. $\overline{BA} \cong \overline{DC}$; b. Definition of a midpoint; c. SAS Congruence Postulate
- C. a. $\overline{BE} \cong \overline{DE}$; b. Vertical angles are congruent; c. ASA Congruence Postulate
- D. a. $\overline{BE} \cong \overline{DE}$; b. Vertical angles are congruent; c. SAS Congruence Postulate

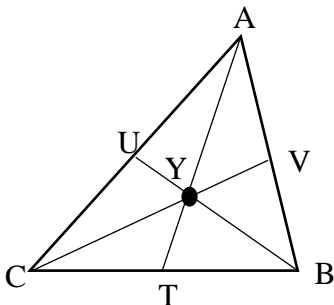
45. When can you use CPCTC?

46. In the diagram of $\triangle CDE$ and its medians, $CJ = 3$, $HJ = 4.5$, $CD = 12$. Find the following lengths.

- a. $JG =$ _____
- b. $HD =$ _____
- c. $FD =$ _____
- d. $CG =$ _____



47. Point Y is the centroid of this triangle. If $YC = 6.5$. Find the length of VC .

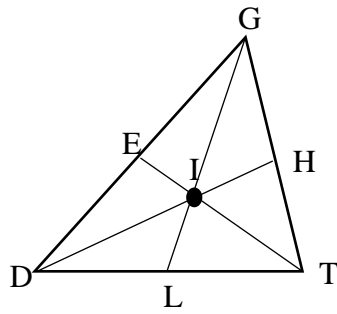


48. Given $\triangle DTG$ with centroid I . If $DH = 4x + 10$ and $HI = 2x - 4$, find the following:

a. $x =$ _____

b. $HI =$ _____

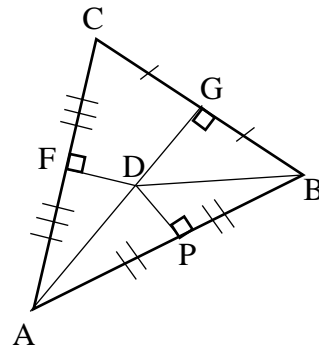
c. $ID =$ _____



49. Given $\triangle ABC$:

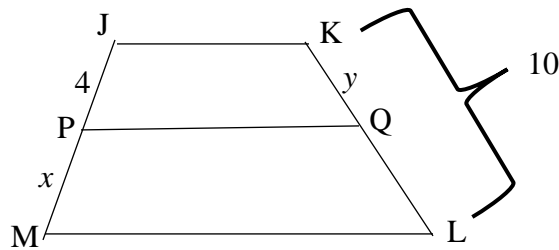
a. What do you know about segments \overline{AD} and \overline{DB} ? Why do you know this?

b. Given $AD = 2x - 9$ and $DB = 27$, find the value of x .



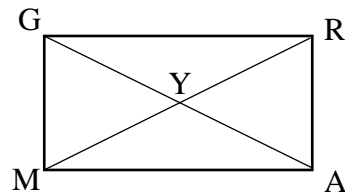
_____ 50. What values of x and y would prove that \overline{PQ} is the midsegment of trapezoid JKLM?

- A. $x = 4$; $y = 5$
- B. $x = 4$; $y = 10$
- C. $x = 8$; $y = 5$
- D. $x = 8$; $y = 10$



_____ 51. Which of the following sets of information is NOT enough to prove that parallelogram GRAM is a rectangle?

- A. $\angle GMR \cong \angle AMR \cong \angle GRM \cong \angle ARM$
- B. $GY = AY = RY = MY$
- C. $\angle GRM$ and $\angle ARM$ are complementary
- D. $GR^2 + RA^2 = GA^2$

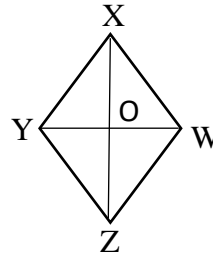


52. Write the missing reasons in the proof.

Given: Quadrilateral WXYZ is a rhombus

\overline{ZX} bisects $\angle YXW$

Prove: $\overline{YZ} \cong \overline{WZ}$



Statement	Reason
1. Quadrilateral WXYZ is a rhombus \overline{ZX} bisects $\angle YXW$	1. Given
2. $\overline{YX} \cong \overline{WX}$	2. In a rhombus, all sides are congruent
3. $\angle YXZ \cong \angle WXZ$	3. In a rhombus, diagonals bisect opposite angles
4. $\overline{XZ} \cong \overline{XZ}$	4.
5. $\triangle YXZ \cong \triangle WXZ$	5.
6. $\overline{YZ} \cong \overline{WZ}$	6.

53. Three vertices of a parallelogram ABCD are given. Find the location of point D.

a. A(1, 5), B(3, 3), C(8, 3)

b. A(-5, 0), B(-2, -4), C(3, 0)

_____ 54. Which of the following conditions is **NOT** enough to conclude that a figure is a rectangle?

- A. It is a parallelogram and diagonals bisect their angles.
- B. It is a parallelogram with a right angle.
- C. It is a rhombus with congruent diagonals.
- D. It is a parallelogram with opposite angles that are supplementary.

55. Three vertices of a rectangle ABCD are A(3, 6), B(0, -1), and C(-2, 4). Find the location of point D.

_____ 56. Which of the following conditions is NOT enough to conclude that a figure is a rhombus?

- A. A figure is a parallelogram with two consecutive congruent sides.
- B. A figure is a parallelogram with perpendicular diagonals.
- C. A figure is a parallelogram and one diagonal forms two congruent triangles.
- D. A figure is a parallelogram and one diagonal bisects its angles.

_____ 57. Which of the following conditions is NOT sufficient to prove that a figure is a square?

- A. The figure is a rectangle with perpendicular diagonals.
- B. The figure is a parallelogram with perpendicular diagonals.
- C. The figure is a rhombus with one right angle.
- D. The figure is a rhombus with congruent diagonals.

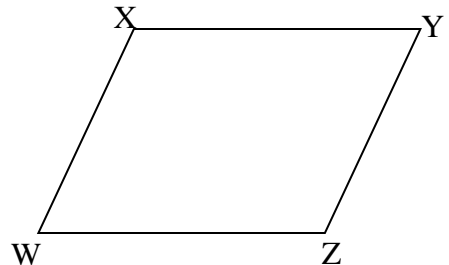
_____ 58. Which of the following are sufficient to prove a quadrilateral is a parallelogram?

- I. Show both pairs of opposite sides parallel.
- II. Show both pairs of opposite angles are congruent.
- III. Show both pairs of opposite sides congruent.
- IV. Show one pair of opposite sides are both parallel and congruent.
- V. Show the diagonals bisect each other.

- A. I, II, III only
- B. I, II, III, and IV only
- C. I, II, III, and V only
- D. I, II, III, IV and V

_____ 59. Which statement **cannot** be used to show that quadrilateral XYZW is a parallelogram?

- A. $\overline{XY} \parallel \overline{WZ}$ and $\overline{YZ} \parallel \overline{XW}$
- B. $XW = WZ$ and $XY = YZ$
- C. $\angle WXY \cong \angle YZW$ and $\angle XYZ \cong \angle ZWX$
- D. $\overline{XY} \cong \overline{WZ}$ and $\overline{XW} \cong \overline{YZ}$

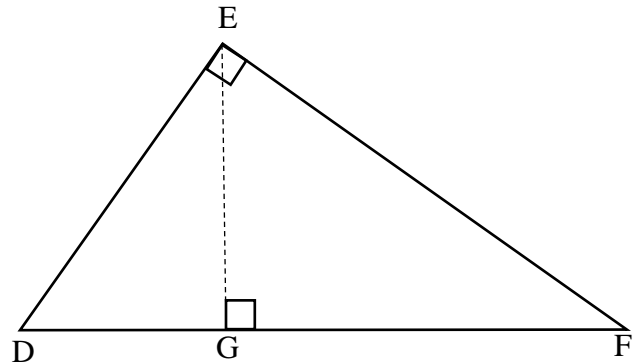


UNIT 3 – ACTIVITIES 17 – 19

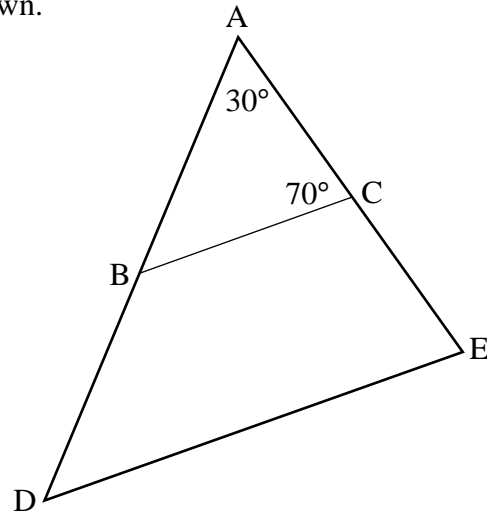
60. What are the ways to prove two triangles are similar?

_____ 61. Determine the similarity statement for the three triangles in the diagram.

- A. $\triangle DEF \sim \triangle DGE \sim \triangle EFG$
- B. $\triangle DEF \sim \triangle EGD \sim \triangle FGE$
- C. $\triangle DEF \sim \triangle DGE \sim \triangle EGF$
- D. $\triangle DEF \sim \triangle EDG \sim \triangle EGF$



_____ 62. Suppose $\angle ACB \cong \angle AED$ in the figure shown.

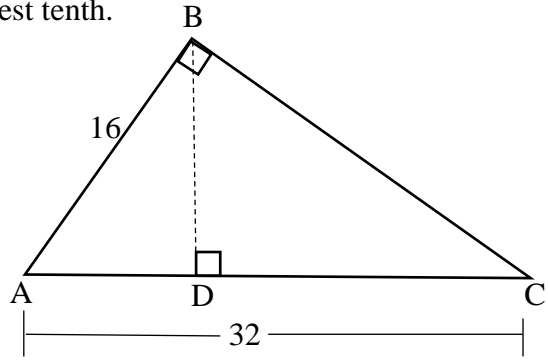


Based on the figure and the given statement, which can prove that $\triangle ACB \sim \triangle AED$?

- A. $m\angle ABC = m\angle ADE = 40^\circ$, and since there are two pairs of corresponding angles congruent, $\triangle ACB \sim \triangle AED$.
- B. $m\angle ABC = m\angle ADE = 80^\circ$, and since there are two pairs of corresponding angles congruent, $\triangle ACB \sim \triangle AED$.
- C. \overline{AC} is proportional to \overline{AE} , and since two corresponding angles are congruent, $\triangle ACB \sim \triangle AED$.
- D. \overline{AB} is proportional to \overline{AD} , and since two corresponding angles are congruent, $\triangle ACB \sim \triangle AED$.

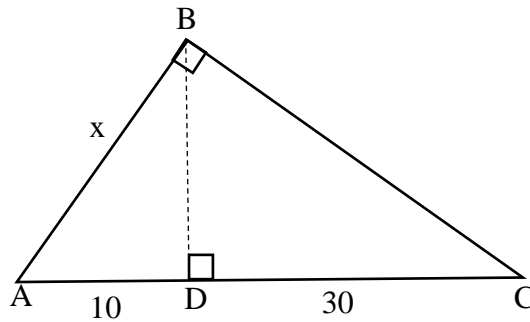
_____ 63. Determine the value of altitude BD to the nearest tenth.

- A. 8.0
- B. 13.9
- C. 22.9
- D. 24.0



_____ 64. Determine the value of x . Round to the nearest whole number, if necessary.

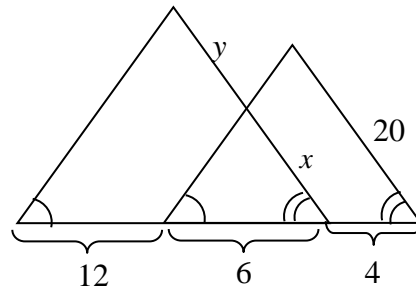
- A. 14
- B. 17
- C. 20
- D. 35



For questions 65 and 66 use the diagram below.

65. Find x

66. Find y



_____ 67. Ramon places a mirror on the ground 45 ft from the base of a flagpole. He walks backwards until he can see the top of the flagpole in the middle of the mirror. At that point, Ramon's eyes are 6 ft above the ground and he is 7.5 ft from the mirror. What is the height of the flagpole.

