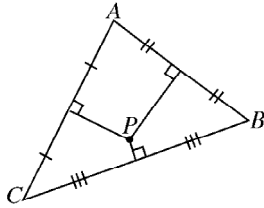
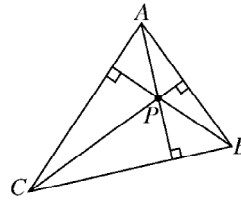


7. Which diagram shows a point P an equal distance from points A , B , and C ?

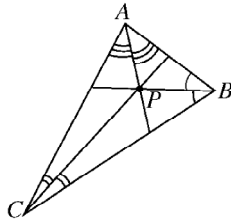
a.



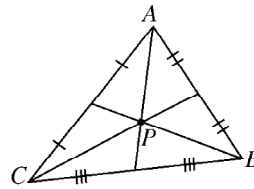
c.



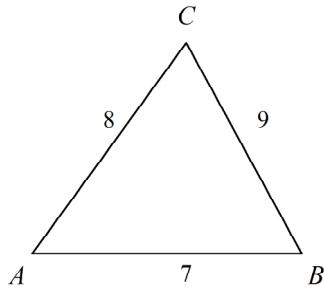
b.



d.



8. Name the smallest angle of $\triangle ABC$. The diagram is not to scale.

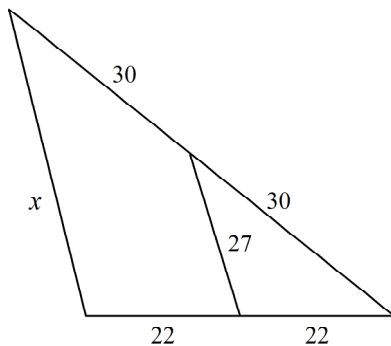


- a. $\angle C$
 b. $\angle A$
 c. $\angle B$
 d. Two angles are the same size and smaller than the third.
9. Jay, Kay, and Ray found themselves far apart when they stopped for lunch while working in a field. Jay could see Kay, then turn through 49° and see Ray. Kay could see Ray, then turn through 55° and see Jay. Ray could see Jay, then turn through 76° and see Kay. Which two were farthest apart?
- a. Jay and Kay
 b. Ray and Jay
 c. Kay and Ray
 d. Kay and Ray were the same distance apart as Ray and Jay.
10. Which three lengths could be the lengths of the sides of a triangle?
- a. 22 cm, 5 cm, 10 cm
 b. 7 cm, 23 cm, 10 cm
 c. 10 cm, 15 cm, 24 cm
 d. 14 cm, 5 cm, 19 cm

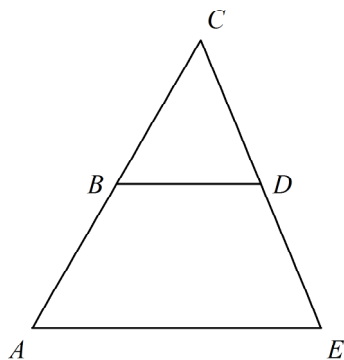
- _____ 11. Which three lengths can NOT be the lengths of the sides of a triangle?
- | | |
|--------------------|---------------------|
| a. 7 m, 7 m, 6 m | c. 15 m, 15 m, 15 m |
| b. 19 m, 8 m, 11 m | d. 22 m, 15 m, 10 m |
- _____ 12. Two sides of a triangle have lengths 6 and 10. Which inequalities describe the values that possible lengths for the third side?
- | | |
|-------------------------------|-------------------------|
| a. $x \geq 4$ and $x \leq 16$ | c. $x > 4$ and $x < 16$ |
| b. $x \geq 6$ and $x \leq 10$ | d. $x > 6$ and $x < 10$ |
- _____ 13. Two sides of a triangle have lengths 5 and 16. Which expression describes the length of the third side?
- | | |
|---------------------------------|-------------------------------------|
| a. at least 11 and less than 21 | c. greater than 11 and less than 21 |
| b. at least 11 and at most 21 | d. greater than 11 and at most 21 |

Short Answer

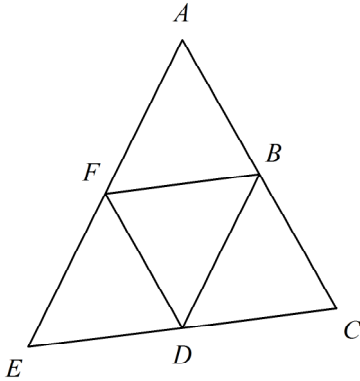
14. Find the value of x . The diagram is not to scale.



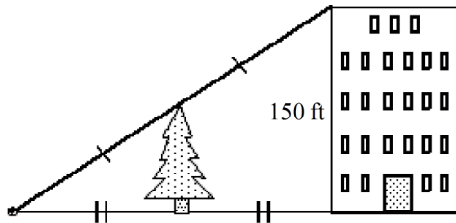
15. B is the midpoint of \overline{AC} , D is the midpoint of \overline{CE} , and $AE = 23$. Find BD . The diagram is not to scale.



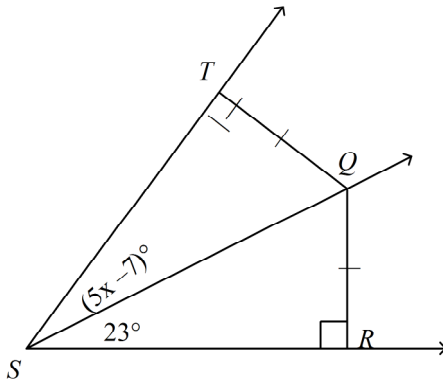
16. Points B , D , and F are midpoints of the sides of $\triangle ACE$. $EC = 33$ and $DF = 23$. Find AC . The diagram is not to scale.



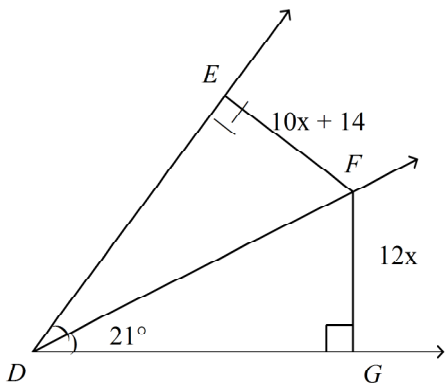
17. Use the information in the diagram to determine the height of the tree. The diagram is not to scale.



18. Q is equidistant from the sides of $\angle TSR$. Find the value of x . The diagram is not to scale.

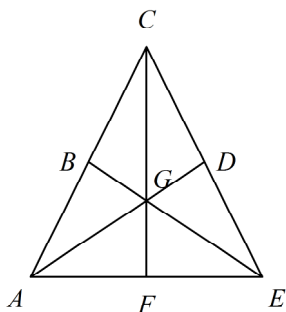


19. \overline{DF} bisects $\angle EDG$. Find the value of x . The diagram is not to scale.

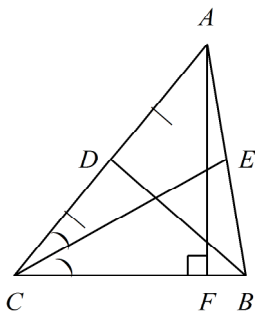


20. Where is the center of the largest circle that you could draw inside a given triangle?

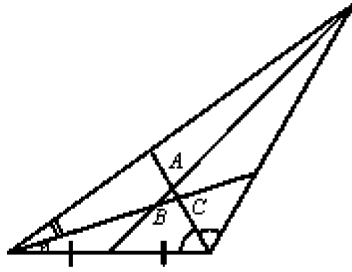
21. In $\triangle ACE$, G is the centroid and $BE = 9$. Find BG and GE .



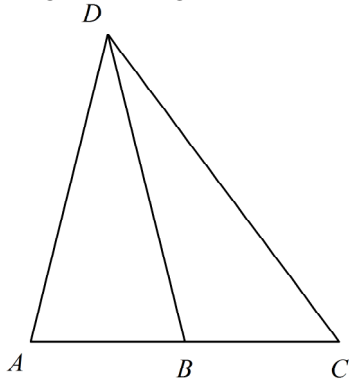
22. Name a median for $\triangle ABC$.



23. Name the point of concurrency of the angle bisectors.



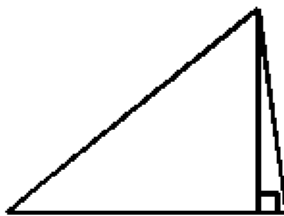
24. Find the length of \overline{AB} , given that \overline{DB} is a median of the triangle and $AC = 44$.



25. For a triangle, list the respective names of the points of concurrency of

- perpendicular bisectors of the sides
- bisectors of the angles
- medians
- lines containing the altitudes.

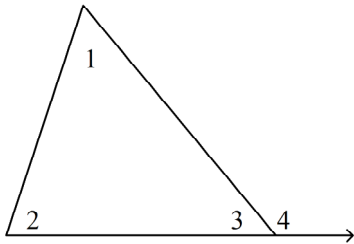
26. What is the name of the segment inside the large triangle?



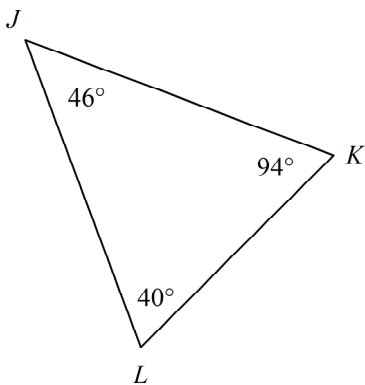
Name: _____

ID: A

27. Name the second largest of the four angles named in the figure (not drawn to scale) if the side included by $\angle 1$ and $\angle 2$ is 10 cm, the side included by $\angle 2$ and $\angle 3$ is 18 cm, and the side included by $\angle 3$ and $\angle 1$ is 14 cm.



28. List the sides in order from shortest to longest. The diagram is not to scale.



29. Two sides of a triangle have lengths 7 and 17. What must be true about the length of the third side, x ?
30. $m\angle A = 8x - 6$, $m\angle B = 6x - 8$, and $m\angle C = 84 - 3x$. List the sides of $\triangle ABC$ in order from shortest to longest.

Ch 5 Exam SAMPLE Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L2 REF: 5-2 Bisectors in Triangles
OBJ: 5-2.1 Perpendicular Bisectors and Angle Bisectors
STA: CA GEOM 2.0| CA GEOM 4.0| CA GEOM 5.0 TOP: 5-2 Example 1
KEY: perpendicular bisector | Perpendicular Bisector Theorem
2. ANS: C PTS: 1 DIF: L3 REF: 5-2 Bisectors in Triangles
OBJ: 5-2.1 Perpendicular Bisectors and Angle Bisectors
STA: CA GEOM 2.0| CA GEOM 4.0| CA GEOM 5.0
KEY: perpendicular bisector | Perpendicular Bisector Theorem | reasoning
3. ANS: B PTS: 1 DIF: L3 REF: 5-2 Bisectors in Triangles
OBJ: 5-2.1 Perpendicular Bisectors and Angle Bisectors
STA: CA GEOM 2.0| CA GEOM 4.0| CA GEOM 5.0
KEY: Perpendicular Bisector Theorem | perpendicular bisector | reasoning
4. ANS: B PTS: 1 DIF: L4
REF: 5-3 Concurrent Lines, Medians, and Altitudes OBJ: 5-3.1 Properties of Bisectors
STA: CA GEOM 2.0| CA GEOM 21.0
KEY: circumcenter of the triangle | perpendicular bisector | reasoning | right triangle
5. ANS: A PTS: 1 DIF: L3
REF: 5-3 Concurrent Lines, Medians, and Altitudes OBJ: 5-3.1 Properties of Bisectors
STA: CA GEOM 2.0| CA GEOM 21.0 KEY: incenter of the triangle | angle bisector | reasoning
6. ANS: C PTS: 1 DIF: L3
REF: 5-3 Concurrent Lines, Medians, and Altitudes OBJ: 5-3.2 Medians and Altitudes
STA: CA GEOM 2.0| CA GEOM 21.0 KEY: altitude of a triangle | orthocenter of the triangle
7. ANS: A PTS: 1 DIF: L2
REF: 5-3 Concurrent Lines, Medians, and Altitudes OBJ: 5-3.1 Properties of Bisectors
STA: CA GEOM 2.0| CA GEOM 21.0 TOP: 5-3 Example 2
KEY: circumcenter of the triangle | circumscribe
8. ANS: A PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.1 Inequalities Involving Angles of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 2 KEY: Theorem 5-10
9. ANS: A PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 3 KEY: problem solving | word problem | Theorem 5-11
10. ANS: C PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 4 KEY: Triangle Inequality Theorem
11. ANS: B PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 4 KEY: Triangle Inequality Theorem
12. ANS: C PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 5 KEY: Triangle Inequality Theorem

13. ANS: C PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
 OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
 TOP: 5-5 Example 5 KEY: Triangle Inequality Theorem

SHORT ANSWER

14. ANS:
54

PTS: 1 DIF: L2 REF: 5-1 Midsegments of Triangles
 OBJ: 5-1.1 Using Properties of Midsegments STA: CA GEOM 17.0
 TOP: 5-1 Example 1 KEY: midsegment | Triangle Midsegment Theorem

15. ANS:
11.5

PTS: 1 DIF: L2 REF: 5-1 Midsegments of Triangles
 OBJ: 5-1.1 Using Properties of Midsegments STA: CA GEOM 17.0
 TOP: 5-1 Example 1 KEY: midpoint | midsegment | Triangle Midsegment Theorem

16. ANS:
46

PTS: 1 DIF: L2 REF: 5-1 Midsegments of Triangles
 OBJ: 5-1.1 Using Properties of Midsegments STA: CA GEOM 17.0
 TOP: 5-1 Example 1 KEY: midpoint | midsegment | Triangle Midsegment Theorem

17. ANS:
75 ft

PTS: 1 DIF: L2 REF: 5-1 Midsegments of Triangles
 OBJ: 5-1.1 Using Properties of Midsegments STA: CA GEOM 17.0
 TOP: 5-1 Example 3
 KEY: midsegment | Triangle Midsegment Theorem | problem solving

18. ANS:
6

PTS: 1 DIF: L2 REF: 5-2 Bisectors in Triangles
 OBJ: 5-2.1 Perpendicular Bisectors and Angle Bisectors
 STA: CA GEOM 2.0| CA GEOM 4.0| CA GEOM 5.0 TOP: 5-2 Example 2
 KEY: angle bisector | Converse of the Angle Bisector Theorem

19. ANS:
7

PTS: 1 DIF: L2 REF: 5-2 Bisectors in Triangles
 OBJ: 5-2.1 Perpendicular Bisectors and Angle Bisectors
 STA: CA GEOM 2.0| CA GEOM 4.0| CA GEOM 5.0 TOP: 5-2 Example 2
 KEY: Angle Bisector Theorem | angle bisector

20. ANS:
the point of concurrency of the bisectors of the angles of the triangle
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.1 Properties of Bisectors STA: CA GEOM 2.0| CA GEOM 21.0
TOP: 5-3 Example 2
KEY: point of concurrency | concurrent | circumcenter of the triangle | incenter of the triangle | centroid | orthocenter of the triangle
21. ANS:
 $BG = 3, GE = 6$
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
TOP: 5-3 Example 3 KEY: centroid | median of a triangle
22. ANS:
 \overline{BD}
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
TOP: 5-3 Example 4 KEY: median of a triangle
23. ANS:
 C
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
KEY: angle bisector | incenter of the triangle | point of concurrency
24. ANS:
22
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
TOP: 5-3 Example 3 KEY: median of a triangle
25. ANS:
circumcenter
incenter
centroid
orthocenter
- PTS: 1 DIF: L3 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
KEY: angle bisector | circumcenter of the triangle | centroid | orthocenter of the triangle | median | altitude | perpendicular bisector

26. ANS:
altitude
- PTS: 1 DIF: L2 REF: 5-3 Concurrent Lines, Medians, and Altitudes
OBJ: 5-3.2 Medians and Altitudes STA: CA GEOM 2.0| CA GEOM 21.0
TOP: 5-3 Example 4
KEY: altitude of a triangle | angle bisector | perpendicular bisector | midsegment | median of a triangle
27. ANS:
 $\angle 1$
- PTS: 1 DIF: L3 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.1 Inequalities Involving Angles of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 2
KEY: corollary to the Triangle Exterior Angle Theorem | Theorem 5-10
28. ANS:
 $\overline{JK}, \overline{LK}, \overline{LJ}$
- PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 3 KEY: Theorem 5-11
29. ANS:
 $10 < x < 24$
- PTS: 1 DIF: L2 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
TOP: 5-5 Example 5 KEY: Triangle Inequality Theorem
30. ANS:
 $\overline{AC}; \overline{AB}; \overline{BC}$
- PTS: 1 DIF: L4 REF: 5-5 Inequalities in Triangles
OBJ: 5-5.2 Inequalities Involving Sides of Triangles STA: CA GEOM 2.0| CA GEOM 6.0
KEY: Theorem 5-11 | multi-part question