Sharyland ISD
Study Guide

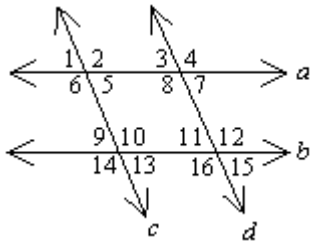
Geometry
Semester A

Student Name: _____

Student ID: _____

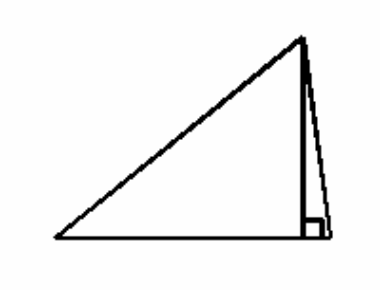
Geometry Semester A CBE **REVIEW**

____ 1. Which angles are corresponding angles?



A. $\angle 8$ and $\angle 16$
B. $\angle 4$ and $\angle 8$
C. $\angle 7$ and $\angle 8$
D. none of these

____ 2. What is the name of the segment inside the large triangle?



A. perpendicular bisector
B. angle bisector
C. median
D. altitude

____ 3. Based on the pattern, what are the next two terms of the sequence?

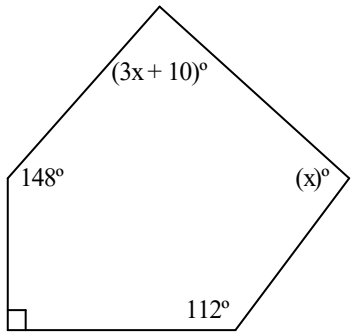
$9, \frac{9}{5}, \frac{9}{25}, \frac{9}{125}, \frac{9}{625}, \ldots$

A. $\frac{9}{3125}, \frac{9}{15625}$
B. $\frac{9}{3125}, \frac{9}{3130}$
C. $\frac{9}{630}, \frac{9}{3130}$
D. $\frac{9}{630}, \frac{9}{635}$

____ 4. If $EF = 3x - 5$, $FG = 4x - 9$, and $EG = 28$, find the values of x, EF, and FG. The drawing is not to scale.

A. $x = 6$, $EF = 13$, $FG = 15$
B. $x = 6$, $EF = 23$, $FG = 33$
C. $x = 4$, $EF = 7$, $FG = 7$
D. $x = 4$, $EF = 13$, $FG = 15$

____ 5. Find the value of x. The diagram is not to scale.

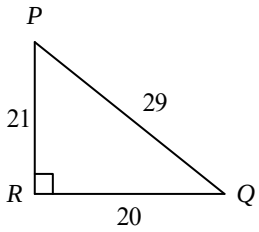


A. 45 B. 145 C. 35 D. 90

____ 6. Find the distance between points $P(8, 2)$ and $Q(3, 8)$ to the nearest tenth.

A. 7.8 B. 14.9 C. 11 D. 61

____ 7. Write the tangent ratios for $\angle P$ and $\angle Q$.



Not drawn to scale

A. $\tan P = \frac{29}{20}; \tan Q = \frac{20}{29}$

B. $\tan P = \frac{29}{21}; \tan Q = \frac{21}{29}$

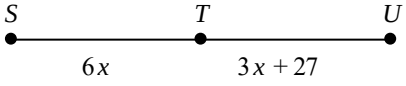
C. $\tan P = \frac{20}{21}; \tan Q = \frac{21}{20}$

D. $\tan P = \frac{21}{20}; \tan Q = \frac{20}{21}$

____ 8. The Polygon Angle-Sum Theorem states: The sum of the measures of the angles of an n-gon is ____.

A. $(n - 1)180$ B. $(n - 2)180$ C. $\frac{n - 2}{180}$ D. $\frac{180}{n - 1}$

____ 9. If T is the midpoint of $\overline{SU}$, what are ST, TU, and SU?



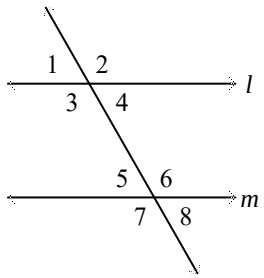
A. $ST = 9$, $TU = 54$, and $SU = 108$

B. $ST = 18$, $TU = 18$, and $SU = 36$

C. $ST = 54$, $TU = 54$, and $SU = 108$

D. $ST = 70$, $TU = 70$, and $SU = 140$

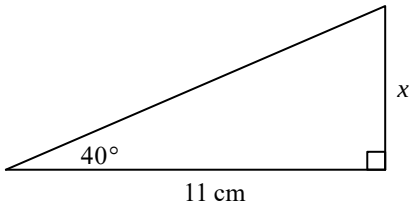
____ 10. Find the value of the variable if $m \parallel l$, $m\angle 1 = 2x + 44$ and $m\angle 5 = 5x + 38$. The diagram is not to scale.



A. –2 B. 2 C. 3 D. 1

Find the value of *x*. Round the length to the nearest tenth.

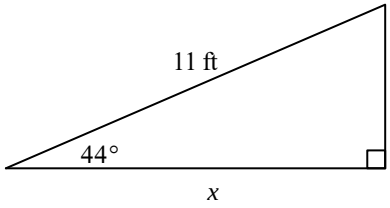
____ 11.



Not drawn to scale

A. 13.1 cm B. 9.2 cm C. 7.1 cm D. 8.4 cm

____ 12.



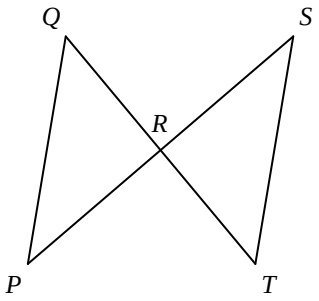
Not drawn to scale

A. 7.6 ft B. 15.3 ft C. 7.9 ft D. 10.6 ft

____ 13. Supply the missing reasons to complete the proof.

Given: $\angle Q \cong \angle T$ and $\overline{QR} \cong \overline{TR}$

Prove: $\overline{PR} \cong \overline{SR}$



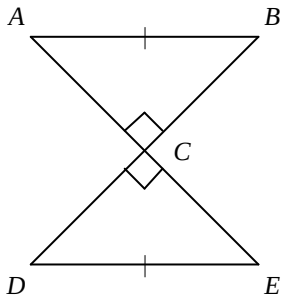
Statement	Reasons
1. $\angle Q \cong \angle T$ and $\overline{QR} \cong \overline{TR}$	1. Given
2. $\angle PRQ \cong \angle SRT$	2. Vertical angles are congruent.
3. $\Delta PRQ \cong \Delta SRT$	3. ___?___
4. $\overline{PR} \cong \overline{SR}$	4. ___?___

A. ASA; Corresp. parts of $\cong \Delta$ are $\cong$.
B. AAS; Corresp. parts of $\cong \Delta$ are $\cong$.
C. ASA; Substitution
D. SAS; Corresp. parts of $\cong \Delta$ are $\cong$.

____ 14. Two sides of a triangle have lengths 10 and 15. What must be true about the length of the third side?

A. less than 15 B. less than 10 C. less than 25 D. less than 5

____ 15. What additional information will allow you to prove the triangles congruent by the HL Theorem?



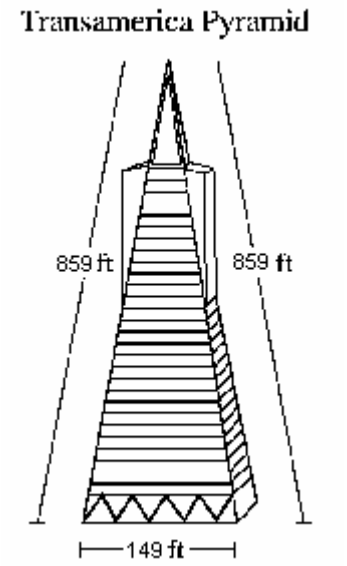
A. $\overline{AC} \cong \overline{DC}$
B. $\angle A \cong \angle E$
C. $m\angle BCE = 90$
D. $\overline{AC} \cong \overline{BD}$

____ 16. Use the Law of Detachment to draw a conclusion from the two given statements. If not possible, write *not possible*.

I can go to the concert if I can afford to buy a ticket.
I can go to the concert.

A. If I can go to the concert, I can afford the ticket.
B. I cannot afford to buy the ticket.
C. I can afford to buy a ticket.
D. not possible

____ 17. A triangular side of the Transamerica Pyramid Building in San Francisco, California, is 149 feet at its base. If the distance from a base corner of the building to its peak is 859 feet, how wide is the triangle halfway to the top?



A. 429.5 ft B. 298 ft C. 149 ft D. 74.5 ft

____ 18. Which choice shows a true conditional, with the hypothesis and conclusion identified correctly?

A. Yesterday was Monday if tomorrow is Thursday.
Hypothesis: Tomorrow is Thursday.
Conclusion: Yesterday was Monday.

B. Yesterday was Tuesday if tomorrow is Thursday.
Hypothesis: Tomorrow is Thursday.
Conclusion: Yesterday was Tuesday.

C. If tomorrow is Thursday, then yesterday was Tuesday.
Hypothesis: Yesterday was Tuesday.
Conclusion: Tomorrow is Thursday.

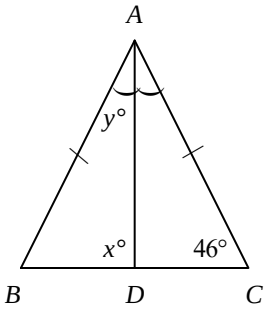
D. If tomorrow is Thursday, then yesterday was Tuesday.
Hypothesis: Yesterday was Tuesday.
Conclusion: Tomorrow is not Thursday.

Write an equation for the line that is parallel to the given line and passes through the given point.

____ 19. $y = 5x + 8$; (2, 16)

A. $y = -\frac{1}{5}x - 6$
C. $y = \frac{1}{5}x + 6$
B. $y = 5x - 78$
D. $y = 5x + 6$

____ 20. Find the values of x and y.



Drawing not to scale

A. $x = 46, y = 44$
C. $x = 90, y = 44$
B. $x = 90, y = 46$
D. $x = 44, y = 46$

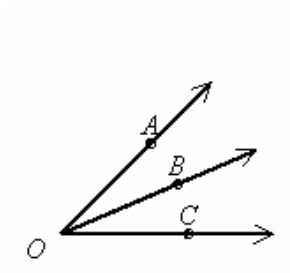
____ 21. How many sides does a regular polygon have if each exterior angle measures 20?

A. 21 sides
B. 20 sides
C. 18 sides
D. 17 sides

____ 22. What is the negation of this statement?
Miguel has three cats.

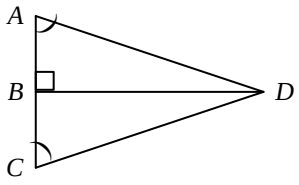
A. Miguel does not like cats.
B. Miguel has no cats.
C. The cat has three owners.
D. Miguel does not have three cats.

____ 23. If $m\angle AOC = 67°$, $m\angle BOC = 2x + 10$, and $m\angle AOB = 4x - 15$, find the degree measure of $\angle BOC$ and $\angle AOB$.
The diagram is not to scale.



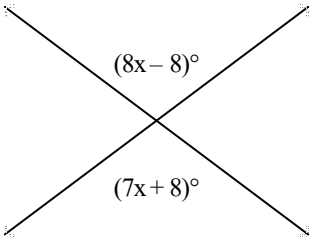
A. $m\angle BOC = 24°$; $m\angle AOB = 43°$
C. $m\angle BOC = 33°$; $m\angle AOB = 34°$
B. $m\angle BOC = 34°$; $m\angle AOB = 33°$
D. $m\angle BOC = 43°$; $m\angle AOB = 24°$

____ 24. Name the theorem or postulate that lets you immediately conclude $\Delta ABD \cong \Delta CBD$.



A. AAS B. SAS C. ASA D. none of these

____ 25. What is the value of *x*?



Drawing not to scale

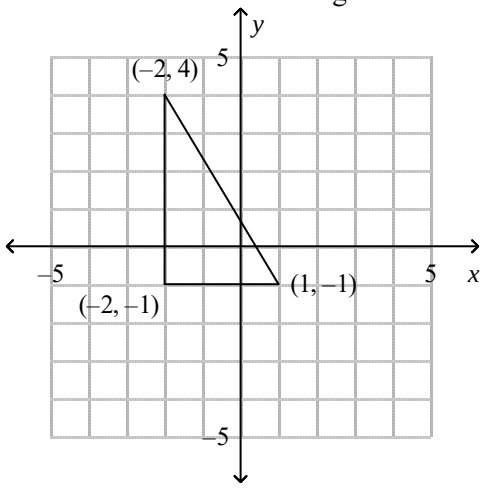
A. –16 B. 60 C. 16 D. 120

____ 26. Write this statement as a conditional in *if-then* form:

All triangles have three sides.

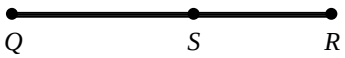
A. If a figure is a triangle, then all triangles have three sides.
B. If a figure has three sides, then it is not a triangle.
C. If a figure is a triangle, then it has three sides.
D. If a triangle has three sides, then all triangles have three sides.

____ 27. Find the circumcenter of the triangle.

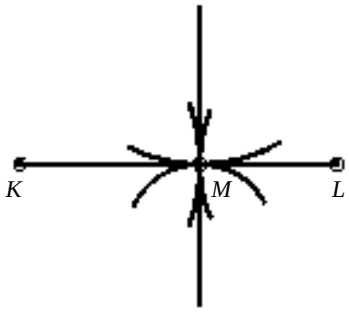


A. $(-\frac{1}{2}, \frac{3}{2})$ B. $(-2, \frac{3}{2})$ C. $(-\frac{1}{2}, -1)$ D. $(\frac{3}{2}, -\frac{1}{2})$

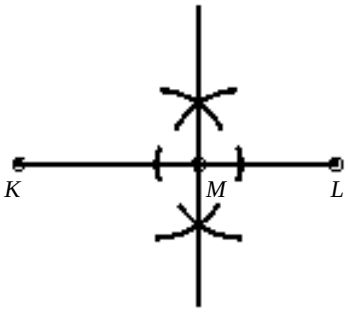
____ 28. Construct the line perpendicular to $\overline{KL}$ at point *M*.



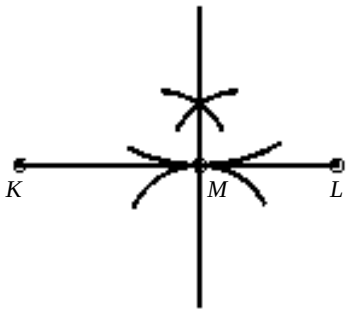
A.



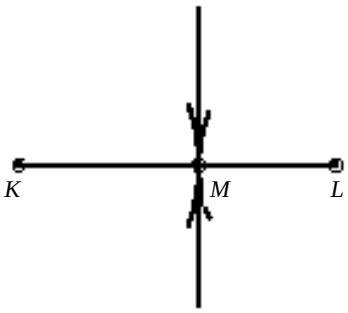
C.



B.



D.

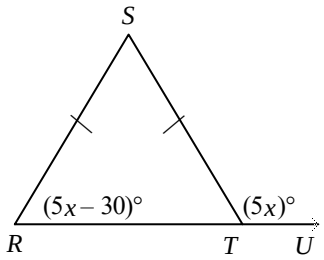


____ 29. What is the converse of the following conditional?

If a point is in the fourth quadrant, then its coordinates are negative.

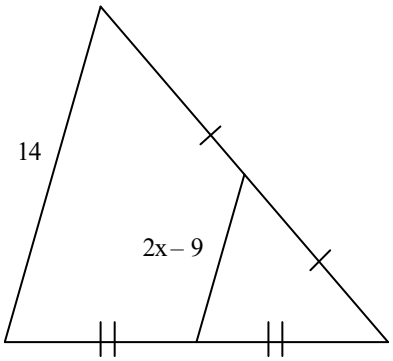
A. If the coordinates of a point are not negative, then the point is not in the fourth quadrant.
B. If a point is in the fourth quadrant, then its coordinates are negative.
C. If a point is not in the fourth quadrant, then the coordinates of the point are not negative.
D. If the coordinates of a point are negative, then the point is in the fourth quadrant.

____ 30. Find the value of x. The diagram is not to scale.



A. $x = 15$ B. $x = 60$ C. $x = 21$ D. none of these

____ 31. Find the value of x.



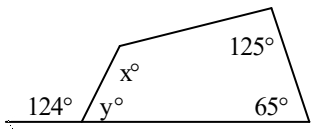
A. 8 B. 7 C. 11.5 D. 10

____ 32. Use the Law of Syllogism to draw a conclusion from the two given statements.

If you exercise regularly, then you have a healthy body.
If you have a healthy body, then you have more energy.

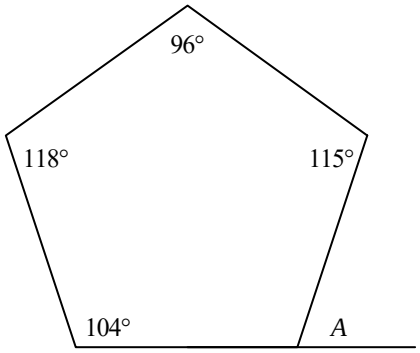
A. You have a healthy body.
B. If you do not have more energy, then you do not exercise regularly.
C. You have more energy.
D. If you exercise regularly, then you have more energy.

____ 33. Find the missing angle measures. The diagram is not to scale.



A. $x = 124$, $y = 125$
B. $x = 56$, $y = 124$
C. $x = 114$, $y = 56$
D. $x = 56$, $y = 114$

____ 34. Find $m\angle A$. The diagram is not to scale.



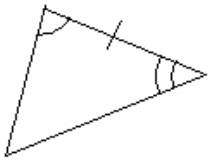
A. 63 B. 117 C. 107 D. 73

____ 35. Given $\Delta QRS \cong \Delta TUV$, $QS = 3v + 2$, and $TV = 7v - 6$, find the length of *QS* and *TV*.

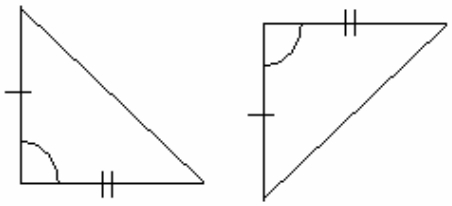
A. 8 B. 20 C. 2 D. 9

____ 36. Which pair of triangles is congruent by ASA?

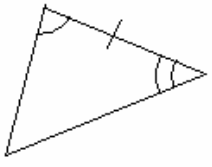
A.



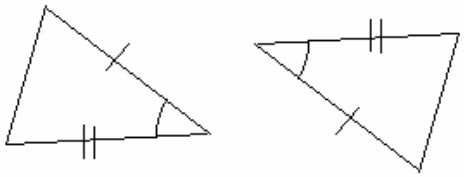
C.



B.



D.

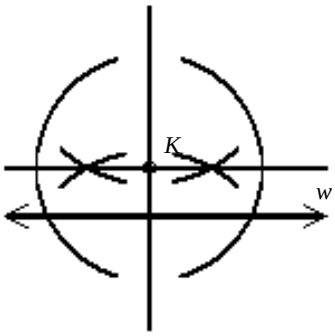


____ 37. If *BCDE* is congruent to *OPQR*, then $\overline{DE}$ is congruent to ___?___.

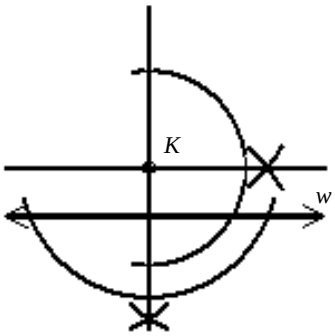
A. $\overline{QR}$ B. $\overline{OP}$ C. $\overline{OR}$ D. $\overline{PQ}$

____ 38. Which diagram suggests a correct construction of a line parallel to given line *w* and passing through given point *K*?

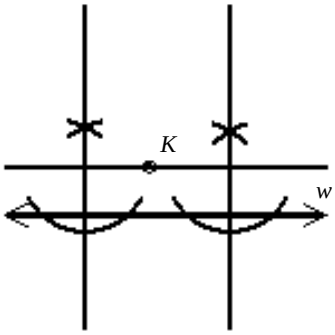
A.



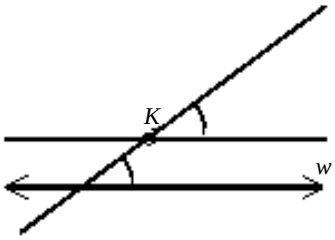
C.



B.



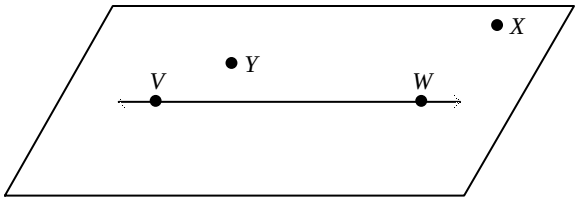
D.



____ 39. Which three lengths could be the lengths of the sides of a triangle?

A. 21 cm, 7 cm, 6 cm
B. 12 cm, 5 cm, 17 cm
C. 10 cm, 15 cm, 24 cm
D. 9 cm, 22 cm, 11 cm

____ 40. Name the line and plane shown in the diagram.

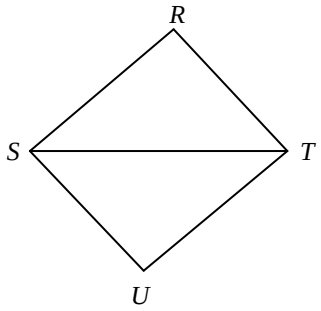


A. $\overleftrightarrow{VW}$ and plane *VWY*
B. $\overleftrightarrow{WV}$ and plane *YX*
C. line *V* and plane *VWY*
D. $\overleftrightarrow{VW}$ and plane *YV*

____ 41. Justify the last two steps of the proof.

Given: $\overline{RS} \cong \overline{UT}$ and $\overline{RT} \cong \overline{US}$

Prove: $\Delta RST \cong \Delta UTS$

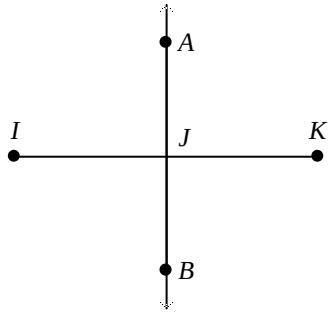


Proof:

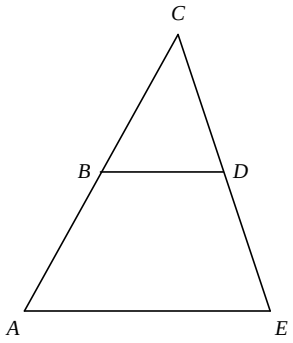
1. $\overline{RS} \cong \overline{UT}$	1. Given
2. $\overline{RT} \cong \overline{US}$	2. Given
3. $\overline{ST} \cong \overline{TS}$	3. ___?___
4. $\Delta RST \cong \Delta UTS$	4. ___?___

A. Reflexive Property of ≅; SAS
B. Symmetric Property of ≅; SSS
C. Symmetric Property of ≅; SAS
D. Reflexive Property of ≅; SSS

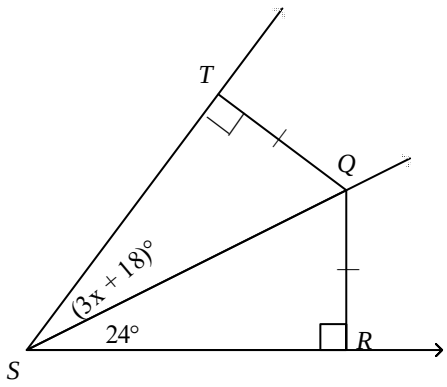
42. Given: $\overleftrightarrow{AB}$ is the perpendicular bisector of *IK*. Name two lengths that are equal.



43. *B* is the midpoint of $\overline{AC}$ and *D* is the midpoint of $\overline{CE}$. Solve for *x*, given $BD = 5x + 3$ and $AE = 4x + 18$.



____ 44. Q is equidistant from the sides of $\angle TSR$. Find the value of x. The diagram is not to scale.



A. 2 B. 14 C. 24 D. 12

____ 45. Identify the hypothesis and conclusion of this conditional statement:

If two lines intersect at right angles, then the two lines are perpendicular.

A. Hypothesis: Two lines intersect at right angles.
Conclusion: The two lines are perpendicular.

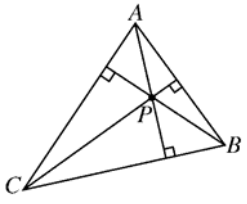
B. Hypothesis: The two lines are not perpendicular.
Conclusion: Two lines intersect at right angles.

C. Hypothesis: The two lines are perpendicular.
Conclusion: Two lines intersect at right angles.

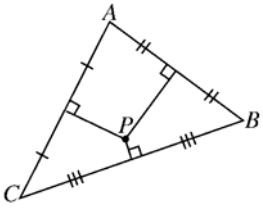
D. Hypothesis: Two lines intersect at right angles.
Conclusion: The two lines are not perpendicular.

____ 46. Which diagram shows a point P an equal distance from points A, B, and C?

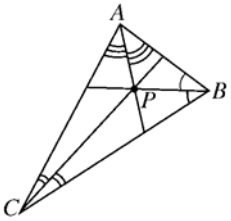
A.



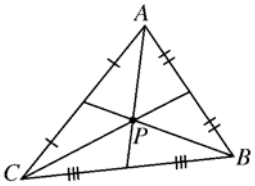
C.



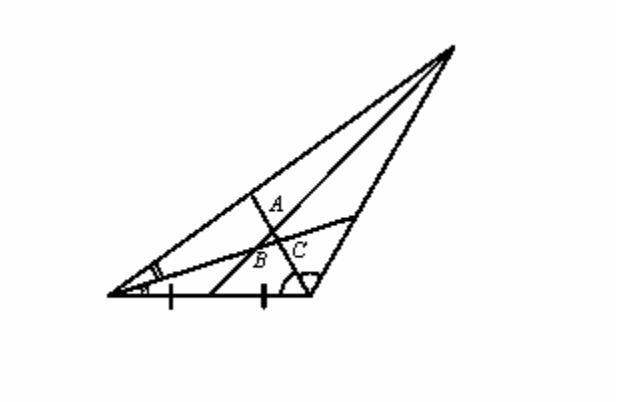
B.



D.

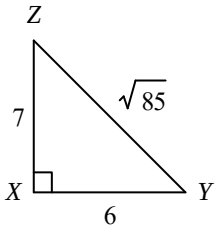


____ 47. Name the point of concurrency of the angle bisectors.



A. *A* B. *C* C. *B* D. not shown

____ 48. Write the tangent ratios for $\angle Y$ and $\angle Z$.



Not drawn to scale

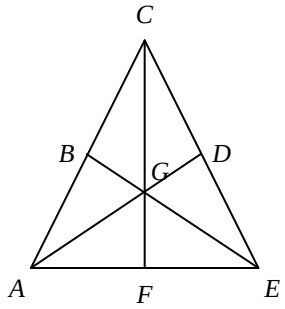
A. $\tan Y = \frac{6}{7}; \tan Z = \frac{7}{6}$

B. $\tan Y = \frac{7}{6}; \tan Z = \frac{6}{7}$

C. $\tan Y = \frac{7}{\sqrt{85}}; \tan Z = \frac{6}{\sqrt{85}}$

D. $\tan Y = \frac{\sqrt{85}}{7}; \tan Z = \frac{\sqrt{85}}{6}$

____ 49. In ΔACE, G is the centroid and $BE = 18$. Find BG and GE.



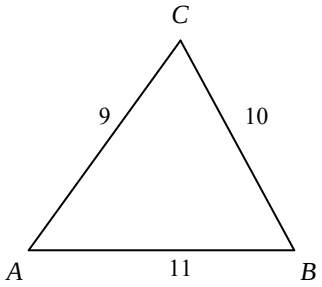
A. $BG = 4\frac{1}{2}, GE = 13\frac{1}{2}$

B. $BG = 12, GE = 6$

C. $BG = 9, GE = 9$

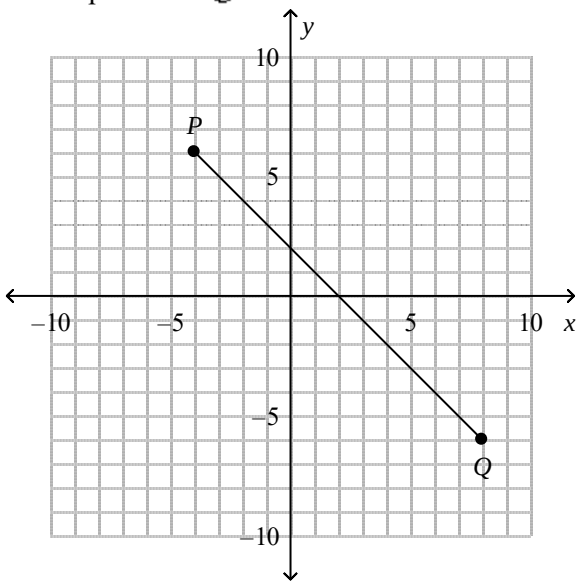
D. $BG = 6, GE = 12$

____ 50. Name the smallest angle of $\triangle ABC$. The diagram is not to scale.



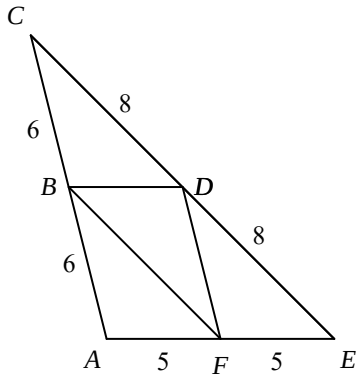
A. $\angle A$
B. $\angle C$
C. $\angle B$
D. Two angles are the same size and smaller than the third.

____ 51. Find the midpoint of $\overline{PQ}$.

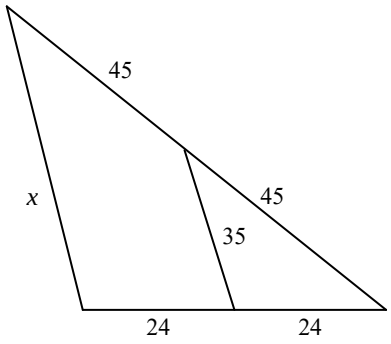


A. (2, 0) B. (1, 1) C. (1, 0) D. (2, 1)

52. Identify parallel segments in the diagram.

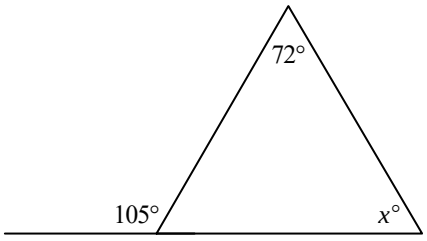


____ 53. Find the value of x. The diagram is not to scale.



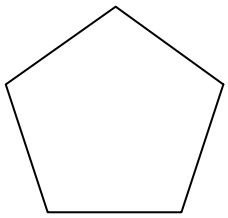
A. 48 B. 90 C. 35 D. 70

____ 54. Find the value of x. The diagram is not to scale.



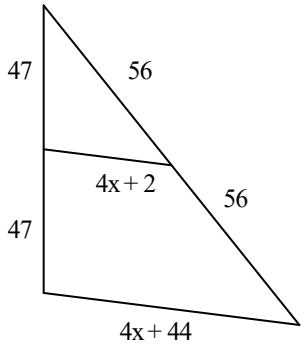
A. 147 B. 75 C. 33 D. 162

____ 55. Find the sum of the measures of the angles of the figure.



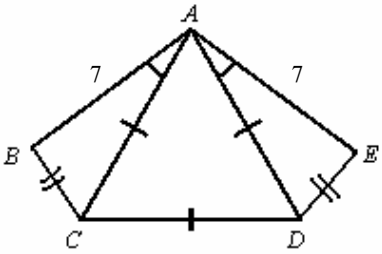
A. 540 B. 720 C. 900 D. 1260

____ 56. Find the length of the midsegment. The diagram is not to scale.



A. 24 B. 84 C. 42 D. 0

____ 57. State whether $\triangle ABC$ and $\triangle AED$ are congruent. Justify your answer.



A. yes, by either SSS or SAS
B. yes, by SAS only
C. yes, by SSS only
D. No; there is not enough information to conclude that the triangles are congruent.

Write the equation of a line that is perpendicular to the given line and that passes through the given point.

____ 58. $y = \frac{7}{8}x - \frac{3}{2}$; (–4, 2)

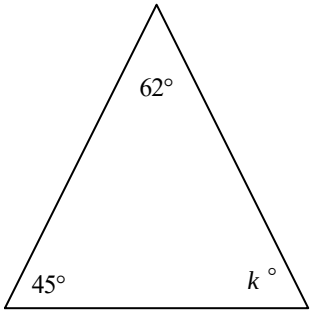
A. $y = -\frac{8}{7}x - \frac{18}{7}$

B. $y = -\frac{8}{7}x - \frac{3}{2}$

C. $y = \frac{8}{7}x - \frac{3}{2}$

D. $y = \frac{8}{7}x - \frac{18}{7}$

____ 59. Find the value of k. The diagram is not to scale.



A. 17 B. 73 C. 107 D. 118

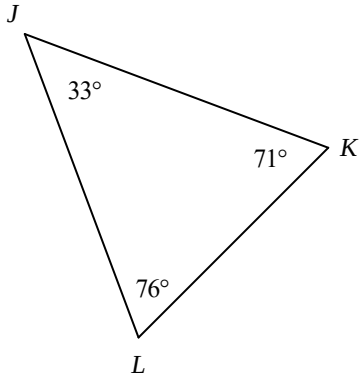
Tell whether the lines for each pair of equations are *parallel*, *perpendicular*, or *neither*.

____ 60. $y = -\frac{1}{6}x - 5$

$24x - 4y = 12$

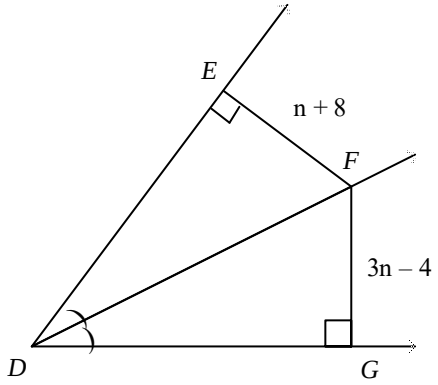
A. parallel B. perpendicular C. neither

____ 61. List the sides in order from shortest to longest. The diagram is not to scale.



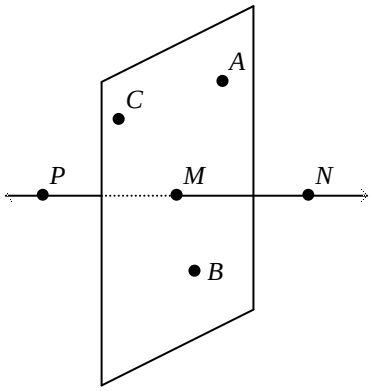
A. $\overline{LK}, \overline{LJ}, \overline{JK}$ B. $\overline{JK}, \overline{LJ}, \overline{LK}$ C. $\overline{JK}, \overline{LK}, \overline{LJ}$ D. $\overline{LK}, \overline{JK}, \overline{LJ}$

____ 62. $\overrightarrow{DF}$ bisects $\angle EDG$. Find FG. The diagram is not to scale.



A. 28 B. 14 C. 15 D. 19

____ 63. What are the names of three collinear points?



A. Points *A*, *M*, and *B* are collinear.
B. Points *C*, *M*, and *B* are collinear.
C. Points *C*, *M*, and *N* are collinear.
D. Points *P*, *M*, and *N* are collinear.

____ 64. Noam walks home from school by walking 8 blocks north and then 6 blocks east. How much shorter would his walk be if there were a direct path from the school to his house? Assume that the blocks are square.

A. 4 blocks
B. 14 blocks
C. 10 blocks
D. The distance would be the same.

____ 65. What is a counterexample for the conjecture?

Conjecture: Any number that is divisible by 4 is also divisible by 8.

A. 26
B. 24
C. 12
D. 40

Geometry Semester A CBE REVIEW
Answer Section

1. ANS: A PTS: 1 DIF: L2 REF: 3-1 Properties of Parallel Lines
   OBJ: 3-1.1 Identifying Angles NAT: NAEP 2005 M1f | ADP K.2.1
   STA: TX TEKS G.1A | TX TEKS G.2B | TX TEKS G.3E TOP: 3-1 Example 1
   KEY: corresponding angles | transversal | parallel lines
2. ANS: D PTS: 1 DIF: L2 REF: 5-5 Medians and Altitudes
   OBJ: 5-5.1 To identify properties of medians and altitudes of a triangle
   STA: (6)(D) TOP: 5-5 Problem 2 Identifying Medians and Altitudes
   KEY: altitude of a triangle | angle bisector | perpendicular bisector | midsegment | median of a triangle
3. ANS: A PTS: 1 DIF: L3 REF: 2-1 Patterns and Conjectures
   OBJ: 2-1.1 To use inductive reasoning to make conjectures STA: (4)(C)| (5)(A)
   TOP: 2-1 Problem 1 Finding and Using a Pattern KEY: pattern | inductive reasoning
4. ANS: A PTS: 1 DIF: L4 REF: 1-2 Measuring Segments
   OBJ: 1-2.1 To find and compare lengths of segments STA: (2)(A)
   TOP: 1-2 Problem 2 Using the Segment Addition Postulate KEY: coordinate | distance
5. ANS: A PTS: 1 DIF: L4
   REF: 6-1 The Polygon Angle-Sum Theorems
   OBJ: 6-1.1 To find the sum of the measures of the interior angles of a polygon
   STA: (5)(A) TOP: 6-1 Problem 4 Using the Polygon Angle-Sum Theorem
   KEY: Polygon Angle-Sum Theorem
6. ANS: A PTS: 1 DIF: L3
   REF: 5-1 Midpoint and Distance in the Coordinate Plane
   OBJ: 5-1.2 To find the distance between two points in the coordinate plane by deriving and using the distance formula STA: (2)(A)| (2)(B) TOP: 5-1 Problem 5 Finding Distance
   KEY: Distance Formula | coordinate plane
7. ANS: C PTS: 1 DIF: L2 REF: 8-3 The Tangent Ratio
   OBJ: 8-3.1 Using Tangents in Triangles
   NAT: NAEP 2005 M1m| ADP I.1.2| ADP I.4.1| ADP K.11.1| ADP K.11.2
   STA: TX TEKS G.3C| TX TEKS G.3E| TX TEKS G.5D| TX TEKS G.8C
   TOP: 8-3 Example 1
   KEY: tangent ratio | tangent | leg opposite angle | leg adjacent to angle
8. ANS: B PTS: 1 DIF: L2
   REF: 3-5 The Polygon Angle-Sum Theorems OBJ: 3-5.2 Polygon Angle Sums
   NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2
   STA: TX TEKS G.3D | TX TEKS G.5A | TX TEKS G.5B KEY: Polygon Angle-Sum Theorem
9. ANS: C PTS: 1 DIF: L4 REF: 1-2 Measuring Segments
   OBJ: 1-2.1 To find and compare lengths of segments STA: (2)(A)
   TOP: 1-2 Problem 5 Using the Midpoint KEY: midpoint
10. ANS: B PTS: 1 DIF: L2 REF: 3-1 Properties of Parallel Lines
    OBJ: 3-1.2 Properties of Parallel Lines NAT: NAEP 2005 M1f | ADP K.2.1
    STA: TX TEKS G.3C | TX TEKS G.3E | TX TEKS G.4A TOP: 3-1 Example 5
    KEY: corresponding angles | parallel lines |
11. ANS: B PTS: 1 DIF: L2
    REF: 8-5 Angles of Elevation and Depression
    OBJ: 8-5.1 Using Angles of Elevation and Depression
    NAT: NAEP 2005 M1k| ADP I.1.2| ADP I.4.1| ADP K.11.2 STA: TX TEKS G.4A| TX TEKS G.11C
    TOP: 8-5 Example 2 KEY: tangent | side length using tangent | tangent ratio

12. ANS: C PTS: 1 DIF: L2
REF: 8-5 Angles of Elevation and Depression
OBJ: 8-5.1 Using Angles of Elevation and Depression
NAT: NAEP 2005 M1k| ADP I.1.2| ADP I.4.1| ADP K.11.2 STA: TX TEKS G.4A| TX TEKS G.11C
TOP: 8-5 Example 2 KEY: cosine | side length using since and cosine | cosine ratio
13. ANS: A PTS: 1 DIF: L3
REF: 4-4 Using Corresponding Parts of Congruent Triangles
OBJ: 4-4.1 To use triangle congruence and corresponding parts of congruent triangles to prove that parts of two triangles are congruent STA: (6)(B)
TOP: 4-4 Problem 1 Proving Parts of Triangles Congruent
KEY: ASA | corresponding parts | proof | two-column proof
14. ANS: C PTS: 1 DIF: L3 REF: 5-7 Inequalities in One Triangle
OBJ: 5-7.1 To use inequalities involving angles and sides of triangles
STA: (5)(D)| (6)(D) TOP: 5-7 Problem 6 Finding Possible Side Lengths
KEY: Triangle Inequality Theorem
15. ANS: A PTS: 1 DIF: L3 REF: 4-6 Congruence in Right Triangles
OBJ: 4-6.1 To prove right triangles congruent using the Hypotenuse-Leg Theorem
STA: (6)(B) TOP: 4-6 Problem 2 Writing a Proof Using the HL Theorem
KEY: hypotenuse | HL Theorem | right triangle | reasoning
16. ANS: D PTS: 1 DIF: L3 REF: 2-4 Deductive Reasoning
OBJ: 2-4.1 To use the Law of Detachment and the Law of Syllogism
STA: (6)(A) TOP: 2-4 Problem 1 Using the Law of Detachment
KEY: deductive reasoning | Law of Detachment
17. ANS: D PTS: 1 DIF: L3 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 4 Using a Midsegment of a Triangle
KEY: midsegment | Triangle Midsegment Theorem | word problem | problem solving
18. ANS: B PTS: 1 DIF: L3 REF: 2-2 Conditional Statements
OBJ: 2-2.1 To recognize conditional statements and their parts STA: (4)(B)| (4)(C)
TOP: 2-2 Problem 1 Identifying the Hypothesis and the Conclusion
KEY: conditional statement | hypothesis | conclusion
19. ANS: D PTS: 1 DIF: L2 REF: 3-6 Parallel and Perpendicular Lines
OBJ: 3-6.2 To write equations of parallel lines and perpendicular lines
STA: (2)(B)| (2)(C)| (2)(E)| (2)(F)| (3)(A) TOP: 3-6 Problem 1 Writing an Equation of a Parallel Line
KEY: parallel lines
20. ANS: C PTS: 1 DIF: L3
REF: 4-5 Isosceles and Equilateral Triangles
OBJ: 4-5.1 To use and apply properties of isosceles and equilateral triangles
STA: (5)(A)| (5)(C)| (6)(B)| (6)(D) TOP: 4-5 Problem 4 Using Algebra
KEY: angle bisector | isosceles triangle
21. ANS: C PTS: 1 DIF: L2
REF: 3-5 The Polygon Angle-Sum Theorems OBJ: 3-5.2 Polygon Angle Sums
NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2
STA: TX TEKS G.3D | TX TEKS G.5A | TX TEKS G.5B TOP: 3-5 Example 3
KEY: sum of angles of a polygon
22. ANS: D PTS: 1 DIF: L3 REF: 5-6 Indirect Proof
OBJ: 5-6.1 To use indirect reasoning to write proofs STA: (6)(D)
TOP: 5-6 Problem 1 Writing the First Step of an Indirect Proof KEY: negation
23. ANS: B PTS: 1 DIF: L3 REF: 1-3 Measuring Angles

OBJ: 1-3.1 To find and compare the measures of angles STA: (6)(A)
TOP: 1-3 Problem 4 Using the Angle Addition Postulate KEY: Angle Addition Postulate

24. ANS: A PTS: 1 DIF: L2
REF: 4-3 Triangle Congruence by ASA and AAS
OBJ: 4-3.1 To prove two triangles congruent using the ASA Postulate and the AAS Theorem
STA: (6)(B) TOP: 4-3 Problem 4 Determining Whether Triangles Are Congruent
KEY: ASA | AAS | SAS

25. ANS: C PTS: 1 DIF: L3 REF: 2-6 Proving Angles Congruent
OBJ: 2-6.1 To prove and apply theorems about angles STA: (6)(A)
TOP: 2-6 Problem 2 Applying the Vertical Angles Theorem
KEY: vertical angles | Vertical Angles Theorem

26. ANS: C PTS: 1 DIF: L2 REF: 2-2 Conditional Statements
OBJ: 2-2.1 To recognize conditional statements and their parts STA: (4)(B)| (4)(C)
TOP: 2-2 Problem 2 Writing a Conditional
KEY: hypothesis | conclusion | conditional statement

27. ANS: A PTS: 1 DIF: L3 REF: 5-4 Bisectors in Triangles
OBJ: 5-4.1 To identify properties of perpendicular bisectors and angle bisectors
STA: (5)(A)| (5)(C)| (6)(D) TOP: 5-4 Problem 2 Finding the Circumcenter of a Triangle
KEY: circumscribe | circumcenter of a triangle | point of concurrency

28. ANS: C PTS: 1 DIF: L2
REF: 3-8 Constructing Parallel and Perpendicular Lines
OBJ: 3-8.2 Constructing Perpendicular Lines
NAT: NAEP 2005 G3b | NAEP 2005 G3g | ADP K.2.1 | ADP K.2.2
STA: TX TEKS G.7A | TX TEKS G.7B | TX TEKS G.7C TOP: 3-8 Example 3
KEY: construction | perpendicular lines

29. ANS: D PTS: 1 DIF: L2 REF: 2-2 Conditional Statements
OBJ: 2-2.2 To write converses, inverses, and contrapositives of conditionals
STA: (4)(B)| (4)(C)
TOP: 2-2 Problem 4 Identifying and Determining Validity of Statements
KEY: conditional statement | converse of a conditional

30. ANS: C PTS: 1 DIF: L4
REF: 4-5 Isosceles and Equilateral Triangles
OBJ: 4-5.1 To use and apply properties of isosceles and equilateral triangles
STA: (5)(A)| (5)(C)| (6)(B)| (6)(D) TOP: 4-5 Problem 5 Finding Angle Measures
KEY: Isosceles Triangle Theorem | isosceles triangle

31. ANS: A PTS: 1 DIF: L3 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 3 Finding Lengths KEY: midpoint | midsegment | Triangle Midsegment Theorem

32. ANS: D PTS: 1 DIF: L3 REF: 2-4 Deductive Reasoning
OBJ: 2-4.1 To use the Law of Detachment and the Law of Syllogism
STA: (6)(A) TOP: 2-4 Problem 2 Using the Law of Syllogism
KEY: deductive reasoning | Law of Syllogism

33. ANS: C PTS: 1 DIF: L2
REF: 3-5 The Polygon Angle-Sum Theorems OBJ: 3-5.2 Polygon Angle Sums
NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2
STA: TX TEKS G.3D | TX TEKS G.5A | TX TEKS G.5B TOP: 3-5 Example 4
KEY: exterior angle | Polygon Angle-Sum Theorem

34. ANS: D PTS: 1 DIF: L3
REF: 3-5 The Polygon Angle-Sum Theorems OBJ: 3-5.2 Polygon Angle Sums
NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2

STA: TX TEKS G.3D | TX TEKS G.5A | TX TEKS G.5B
KEY: pentagon | exterior angle | sum of angles of a polygon

35. ANS: A PTS: 1 DIF: L4 REF: 4-1 Congruent Figures
OBJ: 4-1.1 To recognize congruent figures and their corresponding sides and angles
STA: (6)(C) TOP: 4-1 Problem 2 Using Congruent Sides and Angles
KEY: congruent polygons | corresponding parts

36. ANS: B PTS: 1 DIF: L2
REF: 4-3 Triangle Congruence by ASA and AAS
OBJ: 4-3.1 To prove two triangles congruent using the ASA Postulate and the AAS Theorem
STA: (6)(B) TOP: 4-3 Problem 1 Using ASA KEY: ASA

37. ANS: A PTS: 1 DIF: L3 REF: 4-1 Congruent Figures
OBJ: 4-1.1 To recognize congruent figures and their corresponding sides and angles
STA: (6)(C) TOP: 4-1 Problem 1 Finding Congruent Sides and Angles
KEY: congruent polygons | corresponding parts | word problem

38. ANS: C PTS: 1 DIF: L4
REF: 3-8 Constructing Parallel and Perpendicular Lines
OBJ: 3-8.2 Constructing Perpendicular Lines
NAT: NAEP 2005 G3b | NAEP 2005 G3g | ADP K.2.1 | ADP K.2.2
STA: TX TEKS G.2A KEY: construction | parallel lines

39. ANS: C PTS: 1 DIF: L3 REF: 5-7 Inequalities in One Triangle
OBJ: 5-7.1 To use inequalities involving angles and sides of triangles
STA: (5)(D)| (6)(D) TOP: 5-7 Problem 5 Using the Triangle Inequality Theorem
KEY: Triangle Inequality Theorem

40. ANS: A PTS: 1 DIF: L3 REF: 1-1 Points, Lines, and Planes
OBJ: 1-1.1 To understand basic terms and postulates of geometry
STA: (4)(A) TOP: 1-1 Problem 1 Naming Points, Lines, and Planes
KEY: line | plane

41. ANS: D PTS: 1 DIF: L3
REF: 4-2 Triangle Congruence by SSS and SAS
OBJ: 4-2.1 To prove two triangles congruent using the SSS and SAS Postulates
STA: (5)(A)| (5)(C)| (6)(B) TOP: 4-2 Problem 2 Using SSS
KEY: SSS | reflexive property | proof

42. ANS:
IJ and *JK*

PTS: 1 DIF: L2 REF: 5-3 Perpendicular and Angle Bisectors
OBJ: 5-3.1 To use properties of perpendicular bisectors and angle bisectors
STA: (5)(C)| (6)(A) TOP: 5-3 Problem 3 Using the Perpendicular Bisector Theorem
KEY: perpendicular bisector | Perpendicular Bisector Theorem

43. ANS:
$x = 2$

PTS: 1 DIF: L4 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 3 Finding Lengths KEY: Triangle Midsegment Theorem | midsegment

44. ANS: A PTS: 1 DIF: L2
REF: 5-3 Perpendicular and Angle Bisectors
OBJ: 5-3.1 To use properties of perpendicular bisectors and angle bisectors
STA: (5)(C)| (6)(A) TOP: 5-3 Problem 5 Using the Angle Bisector Theorem
KEY: angle bisector | Converse of the Angle Bisector Theorem

45. ANS: A PTS: 1 DIF: L3 REF: 2-2 Conditional Statements
OBJ: 2-2.1 To recognize conditional statements and their parts STA: (4)(B)| (4)(C)
TOP: 2-2 Problem 1 Identifying the Hypothesis and the Conclusion
KEY: conditional statement | hypothesis | conclusion

46. ANS: C PTS: 1 DIF: L2 REF: 5-4 Bisectors in Triangles
OBJ: 5-4.1 To identify properties of perpendicular bisectors and angle bisectors
STA: (5)(A)| (5)(C)| (6)(D) TOP: 5-4 Problem 2 Finding the Circumcenter of a Triangle
KEY: circumcenter of a triangle | circumscribe | point of concurrency

47. ANS: B PTS: 1 DIF: L3 REF: 5-4 Bisectors in Triangles
OBJ: 5-4.1 To identify properties of perpendicular bisectors and angle bisectors
STA: (5)(A)| (5)(C)| (6)(D)
TOP: 5-4 Problem 4 Identifying and Using the Incenter of a Triangle
KEY: angle bisector | incenter of a triangle | point of concurrency

48. ANS: B PTS: 1 DIF: L3 REF: 8-3 The Tangent Ratio
OBJ: 8-3.1 Using Tangents in Triangles
NAT: NAEP 2005 M1m| ADP I.1.2| ADP I.4.1| ADP K.11.1| ADP K.11.2
STA: TX TEKS G.9B| TX TEKS G.11C| TX TEKS G.3B| TX TEKS G.3D| TX TEKS G.5B
TOP: 8-3 Example 1
KEY: leg adjacent to angle | leg opposite angle | tangent | tangent ratio

49. ANS: D PTS: 1 DIF: L3 REF: 5-5 Medians and Altitudes
OBJ: 5-5.1 To identify properties of medians and altitudes of a triangle
STA: (6)(D) TOP: 5-5 Problem 1 Finding the Length of a Median
KEY: centroid of a triangle | median of a triangle

50. ANS: C PTS: 1 DIF: L3 REF: 5-7 Inequalities in One Triangle
OBJ: 5-7.1 To use inequalities involving angles and sides of triangles
STA: (5)(D)| (6)(D) TOP: 5-7 Problem 2 Using Theorem 5-10

51. ANS: A PTS: 1 DIF: L2
REF: 5-1 Midpoint and Distance in the Coordinate Plane
OBJ: 5-1.1 To find the midpoint of a segment by deriving and using the midpoint formula
STA: (2)(A)| (2)(B) TOP: 5-1 Problem 2 Finding the Midpoint
KEY: coordinate plane | Midpoint Formula

52. ANS:
$\overline{BD} \parallel \overline{AE}$, $\overline{DF} \parallel \overline{AC}$, $\overline{BF} \parallel \overline{CE}$

PTS: 1 DIF: L2 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 2 Identifying Parallel Segments
KEY: midsegment | parallel lines | Triangle Midsegment Theorem

53. ANS: D PTS: 1 DIF: L3 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 3 Finding Lengths KEY: midsegment | Triangle Midsegment Theorem

54. ANS: C PTS: 1 DIF: L2
REF: 3-4 Parallel Lines and the Triangle Angle-Sum Theorem
OBJ: 3-4.2 Using Exterior Angles of Triangles
NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2
STA: TX TEKS G.3C | TX TEKS G.3E | TX TEKS G.4A TOP: 3-4 Example 3
KEY: triangle | sum of angles of a triangle

55. ANS: A PTS: 1 DIF: L2
REF: 6-1 The Polygon Angle-Sum Theorems
OBJ: 6-1.1 To find the sum of the measures of the interior angles of a polygon

STA: (5)(A) TOP: 6-1 Problem 2 Finding a Polygon Angle Sum
KEY: Polygon Angle-Sum Theorem

56. ANS: C PTS: 1 DIF: L4 REF: 5-2 Midsegments of Triangles
OBJ: 5-2.1 To use properties of midsegments to solve problems STA: (6)(D)
TOP: 5-2 Problem 3 Finding Lengths KEY: midsegment | Triangle Midsegment Theorem

57. ANS: A PTS: 1 DIF: L3
REF: 4-2 Triangle Congruence by SSS and SAS
OBJ: 4-2.1 To prove two triangles congruent using the SSS and SAS Postulates
STA: (5)(A)| (5)(C)| (6)(B) TOP: 4-2 Problem 4 Identifying Congruent Triangles
KEY: SSS | SAS | reasoning

58. ANS: A PTS: 1 DIF: L4 REF: 3-6 Parallel and Perpendicular Lines
OBJ: 3-6.2 To write equations of parallel lines and perpendicular lines
STA: (2)(B)| (2)(C)| (2)(E)| (2)(F)| (3)(A)
TOP: 3-6 Problem 3 Writing an Equation of a Perpendicular Line
KEY: perpendicular lines

59. ANS: B PTS: 1 DIF: L2
REF: 3-4 Parallel Lines and the Triangle Angle-Sum Theorem
OBJ: 3-4.1 Finding Angle Measures in Triangles
NAT: NAEP 2005 G3b | NAEP 2005 G3f | ADP J.5.1 | ADP K.1.2
STA: TX TEKS G.3E | TX TEKS G.4A TOP: 3-4 Example 1
KEY: triangle | sum of angles of a triangle

60. ANS: B PTS: 1 DIF: L3 REF: 3-6 Parallel and Perpendicular Lines
OBJ: 3-6.1 To determine whether lines are parallel, perpendicular, or neither
STA: (2)(B)| (2)(C)| (2)(E)| (2)(F)| (3)(A) TOP: 3-6 Problem 2 Classifying Lines
KEY: perpendicular lines | parallel lines | compare properties of two functions

61. ANS: A PTS: 1 DIF: L3 REF: 5-7 Inequalities in One Triangle
OBJ: 5-7.1 To use inequalities involving angles and sides of triangles
STA: (5)(D)| (6)(D) TOP: 5-7 Problem 3 Using Theorem 5-11

62. ANS: B PTS: 1 DIF: L3
REF: 5-3 Perpendicular and Angle Bisectors
OBJ: 5-3.1 To use properties of perpendicular bisectors and angle bisectors
STA: (5)(C)| (6)(A) TOP: 5-3 Problem 5 Using the Angle Bisector Theorem
KEY: angle bisector | Angle Bisector Theorem

63. ANS: D PTS: 1 DIF: L3 REF: 1-1 Points, Lines, and Planes
OBJ: 1-1.1 To understand basic terms and postulates of geometry
STA: (4)(A) TOP: 1-1 Problem 1 Naming Points, Lines, and Planes
KEY: collinear | point

64. ANS: A PTS: 1 DIF: L3
REF: 5-1 Midpoint and Distance in the Coordinate Plane
OBJ: 5-1.2 To find the distance between two points in the coordinate plane by deriving and using the distance formula STA: (2)(A)| (2)(B) TOP: 5-1 Problem 6 Finding Distance
KEY: coordinate plane | Distance Formula | word problem | problem solving

65. ANS: C PTS: 1 DIF: L2 REF: 2-1 Patterns and Conjectures
OBJ: 2-1.1 To use inductive reasoning to make conjectures STA: (4)(C)| (5)(A)
TOP: 2-1 Problem 5 Verifying a Conjecture Is False Using a Counterexample
KEY: conjecture | counterexample