

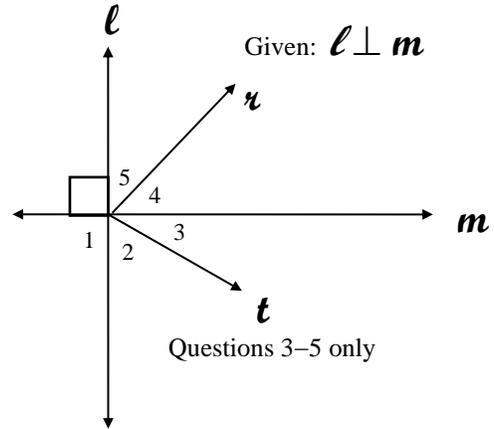
Geometry Honors ISLO Exam Review – Part 1

1. $A(-3,4)$ and $B(2,1)$ are given. Find the coordinates of points C and D if B is the midpoint of \overline{AC} and D is the midpoint of \overline{BC} .
2. Two angles are supplementary and the ratio of their measures are $3 : 7$. Find the measure of both angles. What is the measure of the complement of the smaller angle?

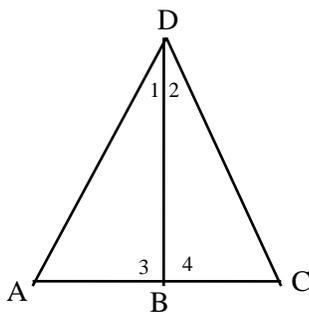
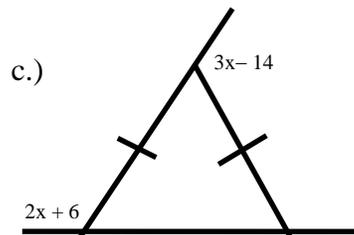
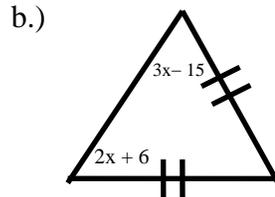
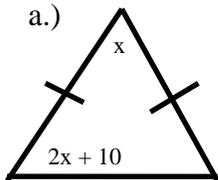
Questions 3–5 refer to the diagram at right.

3. $m\angle 5 = 2x$, $m\angle 4 = x + 12$. Find x .
4. $m\angle 2 = x + 10$ and $m\angle 3 = x + 2$, find the $m\angle 3 =$

5. If $r \perp t$, $l \perp m$, then the angles _____ and _____ are complements of the same angle and must be _____.



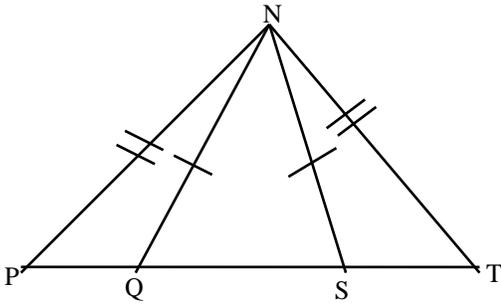
6. The base angles of an isosceles triangle is 12 less than the vertex angle. Find the measures of all three angles of the triangle.
7. The exterior angle of a base angle of an isosceles triangle exceeds the vertex angle by 28° , what is the measure of the vertex angle?
8. For each of the triangles below, find the value of x .



State the reason, if any, that the Δ s at left are \cong .

9. \overline{BD} is a median, and $\angle 3 \cong \angle 4$.
10. \overline{BD} is an altitude, and $\overline{AD} \cong \overline{CD}$.
11. $\angle 3 \cong \angle 4$, and $\angle A \cong \angle C$.
12. \overline{BD} bisect $\angle ADC$, \overline{BD} bisects \overline{AC} .

State any additional parts needed to prove the triangles congruent by the indicated method.

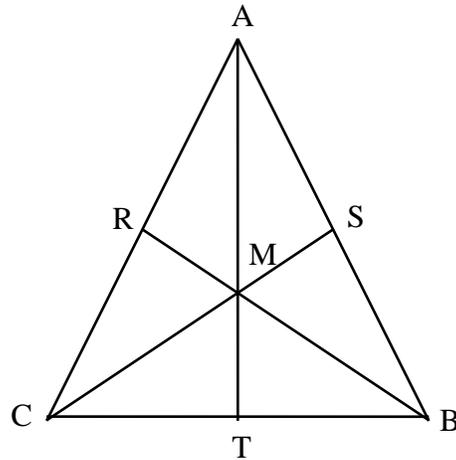


13. $\triangle PNQ \cong \triangle TNS$ by SAS needs _____

14. $\triangle PSN \cong \triangle TQN$ by SSS needs _____

15. Without additional information, is it possible to prove that $\triangle PSN \cong \triangle TQN$? _____ If so, what method? _____

Questions 16 – 23 refer to the diagram at right. Medians \overline{BR} and \overline{CS} are congruent each = 15” while median $\overline{AT} = 24$ ”. Find the following.



16. How long is the base of $\triangle ABC$? _____

17. How long are the legs of $\triangle ABC$? _____

18. What is the area of $\triangle ABC$? _____

19. What is the area of each of the triangles below:

$\triangle AMS =$ _____ $\triangle RST =$ _____ $\triangle RBC =$ _____

20. What is the perimeter of $\triangle RMS$? _____

21. If \overline{BC} is the X axis, and C is the origin, find the coordinates of the following points:

A = _____ B = _____ C = (0, 0) R = _____
 T = _____ S = _____ M = _____

22. Using the diagram above, if \overline{BE} is drawn as an altitude to $\triangle ABC$, what is the slope of \overline{BE} ? _____

23. Write the equation of the perpendicular bisector of \overline{AB} ?

Questions 24 – 27 are based on the following : A (-3,2) and B (3,5)

24. What is the length of \overline{AB} ? _____
25. What are the coordinates of the midpoint of \overline{AB} ? _____
26. If C is between A and B so that $AC = 2(BC)$, what are the coordinates of C ? _____
27. If B is between A and D so that $AB = 6(BD)$, what are the coordinates of D ? _____

Questions 28–35: Decide if the statement is ALWAYS, SOMETIMES or NEVER true.

28. If two angles are supplementary, then they form a linear pair.
29. If the converse of a statement is True, then the Inverse is True.
30. If a triangle is equilateral, then it is isosceles.
31. If parallel lines are cut by a transversal, then alternate exterior angles are supplementary.
32. If 2 lines are perpendicular to the same line, then they are parallel.
33. In a coordinate plane, if two lines are perpendicular, then they have opposite reciprocal slopes.
34. If a segment of a triangle is a median, then it is also an altitude.
35. If two angles are vertical angles then they are supplementary.
36. If a point is reflected over two parallel lines, then the resulting image is a translation

For Questions 36 – 37: Use the following conditional statement to complete:

“If an angle is bisected, then two congruent angles are formed.”

36. Is the statement TRUE or FALSE ? (give a counterexample if False)
37. Write the Converse, Inverse & Contrapositive.
38. Draw a valid conclusion: (1) If I go to the store, then I will buy a new pair of sneakers.
 (2) If I buy a new pair of sneakers, then I will spend money.
 (3) _____
39. Draw a valid conclusion: (1) If I drive a car, then I have a license.
 (2) Joan does not have a license.
 (3) _____

Questions 40 – 46 refer to $\triangle ABC$ whose coordinates are $A(-2,5)$, $B(-2,-1)$ and $C(2,1)$.

40. Slope of \overline{BC} = _____
41. Slope of \overline{AC} = _____
42. Length of median \overline{AD} = _____
Coordinates of D = _____
43. Length of altitude \overline{CE} = _____
44. Length of altitude \overline{AF} = _____
45. Coordinates of point E, if \overline{CE} is a median. E = _____
46. If \overline{CE} and \overline{AD} meet at point G, find CG = _____

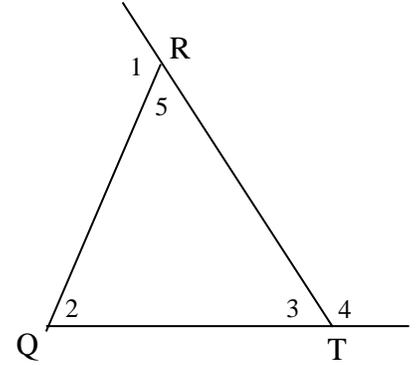
Questions 47 – 54 refer to $\triangle ABC$ with $A(-2,5)$, $B(-2,-1)$ and $C(2,1)$.

Find the coordinates of A' , B' , and C' resulting from the following transformation:

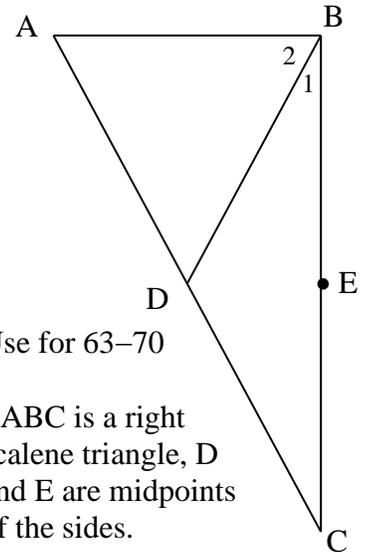
47. $\triangle ABC$ is reflected over the y axis.
 $A' =$ _____ $B' =$ _____ and $C' =$ _____
48. $\triangle ABC$ is reflected over line $y = x$.
 $A' =$ _____ $B' =$ _____ and $C' =$ _____
49. $\triangle ABC$ is rotated 90° clockwise around the origin.
 $A' =$ _____ $B' =$ _____ and $C' =$ _____
50. If $\triangle ABC$ is reflected around the x axis and then shifted 5 units to the right, this is an example of a _____.
51. Two rays \mathbf{u} and \mathbf{t} are in the first quadrant with endpoints at the origin
 \mathbf{u} makes an \angle of 15° with the x-axis and \mathbf{t} makes an \angle of 23° with the y-axis.
If $\triangle ABC$ is reflected over ray \mathbf{u} first, and that new triangle is then reflected over ray \mathbf{t} , describe in exact terms the transformation of $\triangle ABC$ to the final triangle.
52. When a person looks into two parallel mirrors and looks at the back of their head, this is an example of what type of geometric transformation? _____
53. If $\triangle ABC$ is reflected over the line $x = 2$, followed by a reflection over the line $x = -2$, the new \triangle will have coordinates $A' =$ _____ $B' =$ _____ and $C' =$ _____. Describe the magnitude and direction of the transformation.
54. If $\triangle ABC$ is rotated 180° around the origin, followed by a reflection over the y axis, the final triangle can be considered a single transformation of the first. Describe the single transformation.

For Questions 55 – 70: Determine if the following statement is TRUE or FALSE.

- 55. $RQ \geq RT$
 - 56. $QT = RT$
 - 57. $m\angle 4 > m\angle 2$
 - 58. $m\angle 1 = 2(m\angle 3)$
 - 59. $m\angle 2 + m\angle 3 + m\angle 5 = m\angle 1 + m\angle 4$
 - 60. $m\angle 1 > m\angle 5$
 - 61. $m\angle 3 < m\angle 4$
 - 62. altitude from Q to $\overline{RT} >$ median from T to \overline{QR}
-
- 63. $AD = CD$
 - 64. $m\angle A < m\angle C$
 - 65. $AB + BC > AC$
 - 66. $BD = \frac{1}{2}(AC)$
 - 67. $m\angle A = m\angle 2$
 - 68. $2(AB) < 3(DE)$
 - 69. Area of $\triangle ADB <$ Area of $\triangle BDC$
 - 70. $AB \cdot BC = AC \cdot BD$



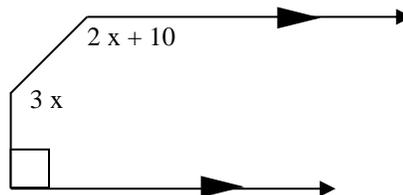
For questions 55 – 62 \overline{QT} is the base of isosceles $\triangle QRT$, and $QT \neq QR$



Use for 63–70

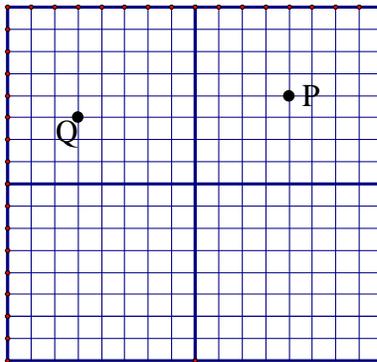
$\triangle ABC$ is a right scalene triangle, D and E are midpoints of the sides.

- 71. If the lines at right are parallel, Find the value of x. _____



89. The exterior base \angle of an isosceles triangle measures a , and the exterior vertex angle of the triangle measures b . Express a in terms of b .
90. What is the radius of a circle that can be inscribed in a triangle whose sides are 10", 24", and 26" ?
91. What is the radius of the circumscribed circle around the triangle described in question #90 ?
92. Find the lengths of all three medians for the question above.
93. What is the length of the shortest altitude for the triangle described above ?

Use the diagram at right for questions 94–99.



94. Reflect P over the X axis to P'. Coordinates of P' = _____
95. Reflect Q over the X axis to Q'. Coordinates of Q' = _____
96. What is the length of P Q' = _____ What is the length of QP' = _____
97. What are the coordinates of point A, where QP' intersects the X axis ?
A = _____
98. Find the lengths: PA = _____ and QA = _____
99. What is the shortest distance from point P to point Q if the path has to hit the X axis first ?
_____ At what point will it hit the X axis ? _____
100. What is the midpoint of line segment of QP?

End of the Short Answer Review

Geometry Honors ISLO Exam Review – Part 1 - Answer Key

1. C (7, -2) D (4.5, -0.5) 2. $54^\circ, 126^\circ; 36^\circ$ 3. 26 4. 41° 5. $\angle 3$ & $\angle 5$ or $\angle 2$ & $\angle 4$;
 \cong
6. $68^\circ, 56^\circ, 56^\circ$ 7. 124° 8. a. 32 b. 21 c. 51.7 9. SAS 10. AAS or HL
11. AAS 12. None 13. $\angle PNQ \cong \angle TNS$ 14. $\overline{PS} \cong \overline{TQ}$ 15. yes, AAS
16. 12 17. $6\sqrt{17}$ in 18. 144 in^2 19. 24, 36, 72 20. 16
21. A (6, 24) B (12, 0) C (0, 0) R (3, 12) T (6, 0) S (9, 12) M (6, 8) 22. $-\frac{1}{4}$
23. $y = \frac{1}{4}x + \frac{39}{4}$ 24. $3\sqrt{5}$ 25. (0, 3.5) 26. (1, 4) 27. (4, 5.5)
28. Sometimes 29. Always 30. Always 31. Sometimes 32. Sometimes
33. Sometimes 34. Sometimes 35. Sometimes 36. Always 36(Again). True
37. CONVERSE: If 2 \cong angles are formed, then an angle was bisected.
 INVERSE: If an angle was not bisected, then 2 \cong angles weren't formed.
 CONTRAPOSITIVE: If 2 \cong angles aren't formed, then an angle wasn't bisected.
38. If I go to the store, then I will spend money. 39. Joan doesn't drive a car.
40. $\frac{1}{2}$ 41. -1 42. $\sqrt{29}; (0, 0)$ 43. 4 44. $\frac{12\sqrt{5}}{5}$ 45. (-2, 2
)
46. $\frac{2\sqrt{17}}{3}$ 47. A'(2, 5) B'(2, -1) C'(-2, 1) 48. A'(5, -2) B'(-1, -2) C'(1, 2)
49. A'(5, 2) B'(-1, 2) C'(1, -2) 50. glide reflection 51. 104° ccw rotation around
 origin
52. translation 53. A'(-10, 5) B'(-10, -1) C'(-6, 1); Translated 8 units left 54. reflection over the x-
 axis
55. True 56. False 57. False 58. True 59. False 60. False 61. True
62. False 63. True 64. False 65. True 66. True 67. True 68. False
69. False 70. False 71. 52° 72. $k = 1$ 73. L (-3, -2) R (5, -2) M (1, 6)
74. \perp 75. 90° 76. the same as the original angle 77. $j \parallel k$ 78. $j \parallel k$
79. none 80. none 81. none 82. $l \parallel m$ 83. $l \parallel m$ 84. $l \parallel m$ 85. $l \parallel m$
86. none 87. $l \parallel m$ 88. $j \parallel k$ and $l \parallel m$ 89. $a = 180 - \frac{1}{2}b$ 90. 4
91. 13 92. 13, $2\sqrt{61}, \sqrt{601}$ 93. $\frac{120}{13}$ 94. (4, -4) 95. (-5, -3)
96. $\sqrt{130}, \sqrt{130}$ 97. Approximately (-1, 0) 98. $\sqrt{41}, 5$ approx. 99. $\sqrt{130}$, approximately (-1, 0)