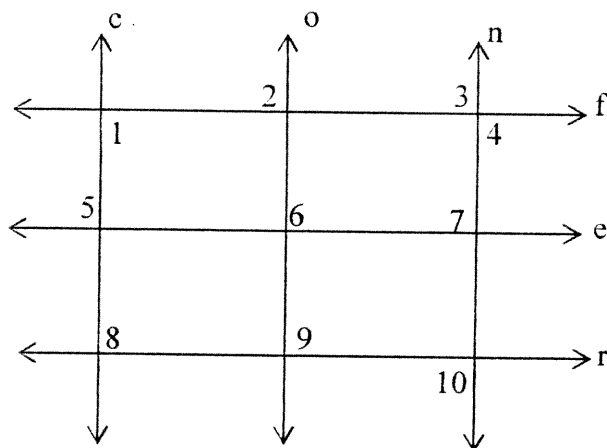


MIDTERM REVIEW

For Always, Sometimes or Never, give a counterexample if possible.

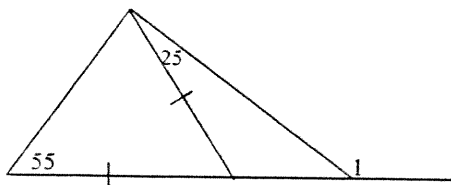
1. (A, S or N) Three points determine a line.
2. (A, S or N) Three points are coplanar.
3. If point A has coordinate $a = -5$ and B has coordinate $b = 17$, find AB.
4. If point C has coordinate $c = -6$ and $CD = 15$, find the coordinate of D.
5. (A, S or N) $PQ + QR = PR$
6. A, B, and C are collinear. If $AB = 10$ and $BC = 13$, find AC.
7. B is between A and C. $AB = \frac{1}{5}BC$, $AC = 18$. Find AB and BC.
8. An angle is a figure formed by two _____ rays with a common _____.
9. (A, S, or N) $m\angle ABC + m\angle CBD = m\angle ABD$.
10. If $m\angle ABC = 40$, $m\angle CBD = 70$, $m\angle ABD \neq 110$, and all four points lie in one plane, draw a diagram and find $m\angle ABD$.
11. (T or F) An angle may have a measure of 180.
12. Find the midpoint of the segment with endpoints A (-1, 6) and B(5, 10).
13. \overline{BD} is the bisector of $\angle ABC$. $m\angle ABD = 7x + 2$, $m\angle DBC = 2(46 - x)$. Find $m\angle ABD$.
14. Can a triangle be both equilateral and isosceles?
15. A triangle has vertex coordinates (1,1), (1,5) and (5,3). Find the length of each side and determine what type of triangle this is based on the lengths of its sides.
16. Write the statement and determine whether it is true or false.
"All rectangles have \cong diagonals.":
 - a. If-then form:
 - b. Converse:
 - c. Inverse:
 - d. Contrapositive:
17. (A, S or N) The converse of a true statement is true.

31. The figure below represents 6 lines and some of the angles that they form. For each of the following, based on the given information, what can you prove? Provide a reason. If no conclusion can be drawn, then write NONE.



- If $\angle 3 \cong \angle 7$, then lines _____ and _____ are parallel.
- If $c \perp e$ and $o \perp e$, then _____
- If $e \parallel r$, the $\angle 5$ and $\angle 8$ are _____.
- If $\angle 8 \cong \angle 10$, then lines _____ and _____ are parallel.
- If $\angle 3 \cong \angle 4$, then lines _____ and _____ are parallel.
- If $\angle 1 \cong \angle 5$, then lines _____ and _____ are parallel.
- If $o \parallel n$, then $\angle 6$ and $\angle 7$ are _____.

32. Find $m\angle 1$.



33. The angles of a triangle measure $5x - 6$, $3x + 4$, and $10x + 2$. Find the measure of the largest angle.

34. The measures of the exterior angles of the acute angles of a right triangle are $3x + 25$ and $5x + 5$. Find the measures of the acute angles.

35. Define skew lines:

36. Explain why three regular pentagons cannot tile in a plane.

37. In quadrilateral ABCD the measures of $\angle A$, $\angle B$, $\angle C$ and $\angle D$ are in the ratio of 1:2:3:4, respectively. Find the measures of the four angles and determine which segments are parallel.

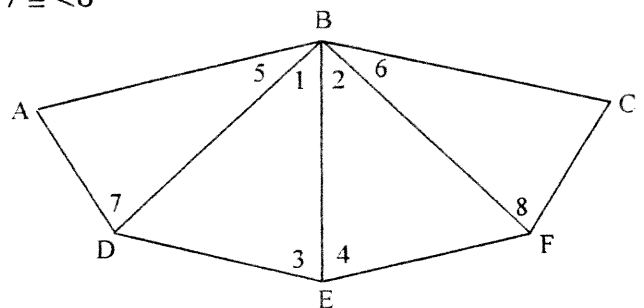
38. In an octagon, the sum of the measures of the interior angles is _____ and the sum of the exterior angles is _____.

39. (A, S or N) If $\triangle ABC \cong \triangle FED$ then $\triangle ABC \cong \triangle DEF$. Provide counterexample(s) if necessary.

40. $\triangle ABC \cong \triangle LMN$, $m\angle B = x^2$, $m\angle L = 9x$, $BC = x - 2$, $MN = 16 - x$, $AB = 2x - 14$. How long is \overline{LM} ?

41. List the triangle congruence postulates and explain what they mean.

42. Given: $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$, $\angle 5 \cong \angle 6$, $\angle 7 \cong \angle 8$
 Prove: $\angle A \cong \angle C$



43. Write the formulas or equations for the following.

a. midpoint of a segment.

b. slope of a line through 2 points.

c. distance between two points.

d. equation of a line through a point with a given slope.

44. Write the equation of the line through $(-2, 5)$ with slope -3 .

45. A $(-2, 1)$ and B $(4, -3)$

a. Find the midpoint of \overline{AB}

b. Find the slope of \overline{AB} .

c. Find AB.

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

46. a. Find x such that $\overline{AB} \parallel \overline{CD}$. A $(-2, -1)$, B $(-1, 2)$, C $(-1, -3)$, D (x, x) .

b. For the same four points, find x such that $\overline{CD} \perp \overline{AB}$.

47. Is $\triangle ABC$ a right triangle? A $(-2, 1)$, B $(-1, -3)$ and C $(2, -2)$?

48. M is the midpoint of \overline{AB} . Find the coordinates of B if the coordinates of A and M are as follows: A $(2, 7)$ and M $(5, -4)$

49. Find the equation of the line that contains the points:

a. $(3, 5)$, $(-5, -4)$

b. $(6, 7)$, $(6, -11)$

c. $(5, 4)$, $(-2, 4)$

50. Find the equation of the line that contains the point (5, 3) and is perpendicular to the line $x + 2y = 4$.

51. Find an equation of the line that contains the altitude \overline{AD} of $\triangle ABC$ with vertices that have coordinates A (- 2, 6), B (- 8, - 4), and C (6, 2).

52. Find an equation of the line that contains the median \overline{BD} of $\triangle ABC$ with vertices that have coordinates A (4, 6), B (6, 2) and C (- 2, - 4).

53. LOGIC: Write a logic proof for each of the following.

a. $(A \wedge \sim B) \rightarrow C$

$D \rightarrow \sim C$

A

D

Prove: B

b. I can do this proof or I cannot think clearly.

I can think clearly if I know logic.

If I don't know logic then I need help.

I don't need help.

Prove: I can do this proof

Let P represent " I can do this proof."

Let T represent " I can think clearly."

Let L represent " I know logic."

Let H represent "I need help."

54. Write the 5 properties of a parallelogram.

55. A rectangle has all the properties of a parallelogram plus two other properties. Write those two properties.

56. A rhombus has all the properties of a parallelogram plus three other properties. Write those three properties.

57. A square had all the properties of a _____, a _____ and a _____.

58. Name six ways of proving a quadrilateral is a parallelogram.

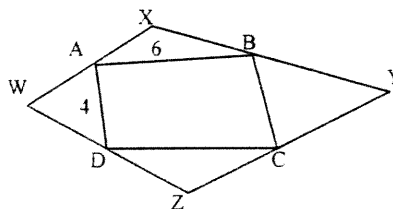
59. Given $YRZA$ is a parallelogram. $AY = 2x + 3$, $YR = 3x + 1$ and $RZ = 3x - 2$. Find the perimeter of parallelogram $YRZA$.

60. $W(4, 0)$, $X(0, 3)$, $Y(-4, 0)$ and $Z(0, -3)$. Use the distance formula only to tell if $WXYZ$ is a parallelogram. Is $WXYZ$ a rectangle? Is it a rhombus? Explain.

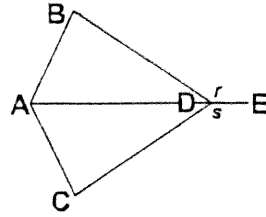
61. In $\triangle ABC$, X is the midpoint of \overline{AB} , Y is the midpoint of \overline{BC} and Z is the midpoint of \overline{AC} . $XY = 4$ and $YZ = 5$. If the perimeter of $\triangle ABC$ is 32, find XZ .

62. The length of one base of a trapezoid is 3 times the length of the other base. If the median is 12 cm, find the length of the bases.

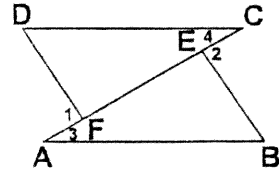
63. A , B , C and D are the midpoints of the sides of quadrilateral $WXYZ$. Find the length of the missing sides of quadrilateral $ABCD$.



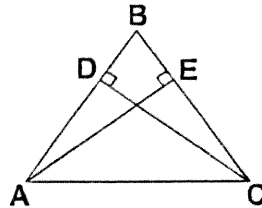
1. Given: $\angle r \cong \angle s$, and $\overline{BD} \cong \overline{CD}$,
 Prove: $\overline{AB} \cong \overline{AC}$.



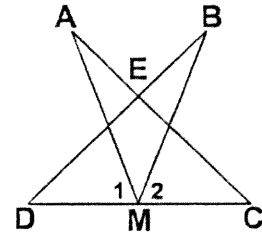
2. Given: $\overline{AF} \cong \overline{CE}$, $\angle 3 \cong \angle 4$ and $\angle 1 \cong \angle 2$
 Prove: $\angle B \cong \angle D$



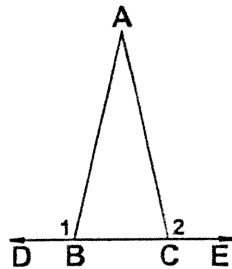
3. Given: $\overline{AB} \perp \overline{CD}$, $\overline{AE} \perp \overline{BC}$, and $\overline{BD} \cong \overline{BE}$,
 Prove: $\overline{AE} \cong \overline{CE}$.



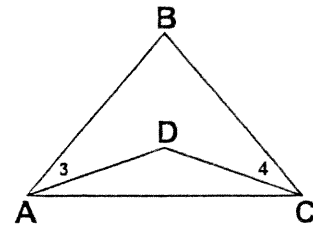
4. Given: $\angle D \cong \angle C$, $\angle 2 \cong \angle 1$, and M is the midpoint of \overline{DC}
 Prove: $\overline{DB} \cong \overline{CA}$.



5. Given: $\angle 1 \cong \angle 2$
 Prove: $\triangle ABC$ is isosceles.



6. Given: $\overline{AB} \cong \overline{BC}$ and $\angle 3 \cong \angle 4$
 Prove: $\triangle ADC$ is isosceles.



7. Given: $\overline{RP} \cong \overline{RQ}$ and $\overline{SP} \cong \overline{SQ}$
 Prove: \overline{RT} bisects \overline{PQ}

