Name:_____ Geometry Mid-Term Review

☆ Exam Date: _____

☆ Exam Format:

Part I: 39 multiple choice

Part II: 10 Matching Statements to Reasons

Part III: 18 short answer

Part IV: 2 Proofs

Part V: 2 Open Ended Problems

☆ You will be allowed to use a scientific calculator for this exam.

☆I also plan on doing the following to review for the exam:

- **Reading through notes.**
- **Re-doing previous class/home work problems.**
- **Re-doing previous quiz/test problems.**
- **Reading my textbook.**
- **Using online resources/videos.**
- **Seeing my teacher to ask questions.**
- **LOOK OVER ALL MY PROOFS!**

Definitions & Terms to Know!

Coplanar

Collinear

Skew

Midpoint

Perimeter

Angle Bisector

Complementary

Supplementary

Linear Pair

Vertical Angles

Adjacent Angles

Opposite Rays

Acute, Right, Obtuse, Equiangular

Scalene, Isosceles, Equilateral

Triangle Sum Theorem

Exterior Angle Theorem

Base Angle Theorem

Converse to the Base Angle Theorem

Slope (formula, parallel lines, perpendicular lines)

Parallel lines

Perpendicular lines

Transversal

Alternate Interior Angles

Alternate Exterior Angles

Consecutive Interior

Logic Statements (if-then, converse, inverse, contrapositive)

Counterexample

Slope-intercept form ($y = mx + b$)

Ray, line, segment, point, plane notation

SAS, SSS, ASA, AAS, HL congruence theorems/postulates

Segment Addition Postulate

30-60-90 Triangles

45-45-90 Triangles

SOH-CAH-TOA

1.

Match each of the following vocabulary words with its definition.

a. line segment
b. line
c. obtuse angle
d. point
e. parallel lines
f. perpendicular lines

____ 1. a straight path that extends without end in opposite directions
____ 2. a part of a line between two endpoints
____ 3. an angle whose measure is greater than 90° but less than 180°
____ 4. two lines that intersect to form 90° angles
____ 5. an exact location in space
____ 6. two lines that never intersect

Match each of the following vocabulary words with its definition.

a. right angle
b. ray
c. acute angle
d. angle
e. plane

____ 7. a part of a line that starts at one endpoint and extends forever
____ 8. an angle that measures 90 degrees
____ 9. a figure formed by two rays with a common endpoint called a vertex
____ 10. an angle that measures less than 90 degrees
____ 11. a flat surface that extends forever

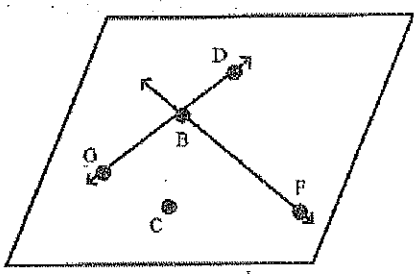
2. Use the diagram to name each geometric figure.

(A) name three **coplanar** points.

(B) Name two lines on the figure.

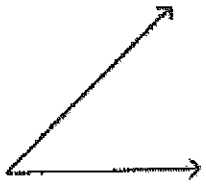
(C) Name a plane on the figure.

(D) Are points *G, B, and D* collinear?



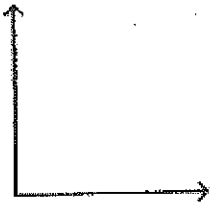
3. Classify each angle acute, obtuse, right or straight.

(A)



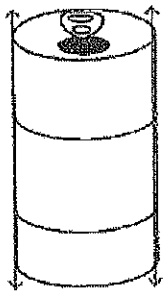
(B)

(C)

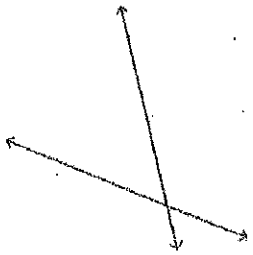


4. Classify the pair of lines as intersecting, parallel, perpendicular, or skew lines.

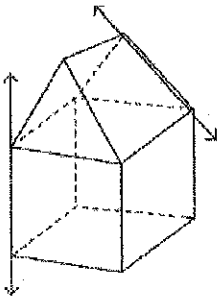
(A)



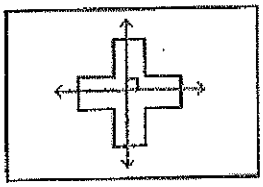
(B)



(C)



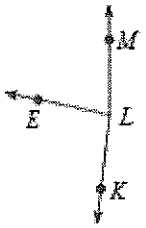
5. A school nurse has the following patch on her nurse's uniform. What type of lines are the lines on the patch?



6. E is in the interior of $< KLM$.

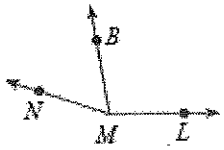
If $m < ELM = 78°$ and $m < KLE = 95°$,

Then $m < KLM =$ _____°



7. If $m < NMB = 62°$ and $m < NML = 162°$,

Find $m < BML$.



8. Two angles $< ABC$ and $< CBD$ are supplementary. If $m < ABC = 62°$, what is the $m < CBD$?

9. Two angles $< ABC$ and $< CBD$ are complementary. If $m < ABC = 71°$, what is the $m < CBD$?

10. If $\overrightarrow{QS}$ bisects $\angle PQR$. Find the measure of $\angle PQR$

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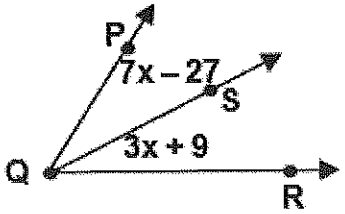
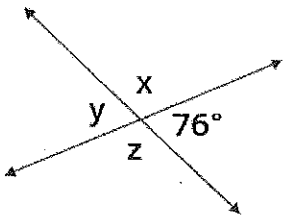


11. $m < X =$

$m < Y =$

$m < Z =$



What is the relationship between $< X$ and $< Z$?

What is the relationship between $< X$ and $< Y$?

12. Point M is the midpoint of $\overline{VW}$.
Find the length of $\overline{VM}$.

13. If H is the midpoint of $\overline{TE}$, and $\overline{TH}$ = 18, then $\overline{TE}$ = _____.

14. Classify the following triangles.

(a) A triangle with sides 5", 5", and 5" is

(b) A triangle with angles $90°, 45°, and\ 45°$ is

(c) A triangle with sides 3", 4", and 9" is

(d) A triangle with angles $50°, 60°, and\ 70°$ is

(e) A triangle with sides 8", 8", and 12" is

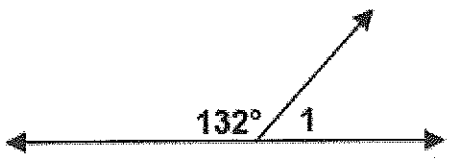
(f) A triangle with angle $115°, 35°, and\ 30°$ is

15.

(a) The intersection of two lines is a _____.

(b) The intersection of two planes is a _____.

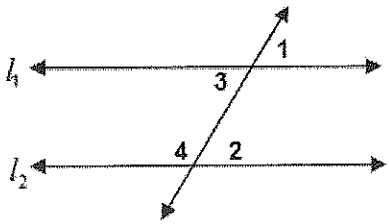
16. $m\angle 1 = 5x - 7$, x = ____



17. Given: $l_1 \parallel l_2$

(a) What angles are congruent? And Why?

(b) What angles add up to 180°? And Why?



18.

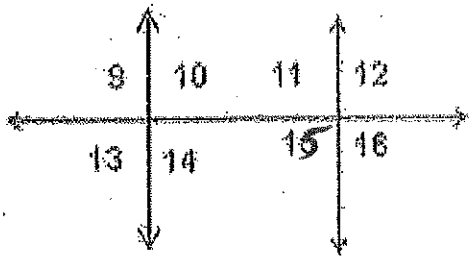
Use the figure at the right to answer problems 1-8.

Classify each pair of angles as one of the following:

(a) alternate interior angles (b) corresponding angles

(c) alternate exterior angles (d) vertical angles

(e) supplementary angles (f) none



1. _____ ∠9 & ∠16

2. _____ ∠15 & ∠11

3. _____ ∠10 & ∠15

4. _____ ∠12 & ∠15

5. _____ ∠9 & ∠11

6. _____ ∠9 & ∠15

7. _____ ∠13 & ∠14

8. _____ ∠14 & ∠11

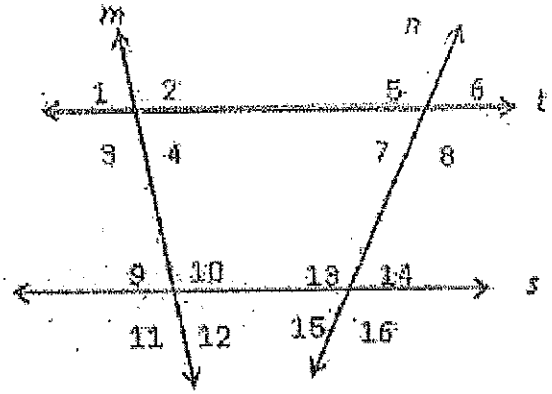
19.

$m\angle 2 = 97°$ $m\angle 6 = 83°$

$m\angle 3$ = _____ $m\angle 5$ = _____

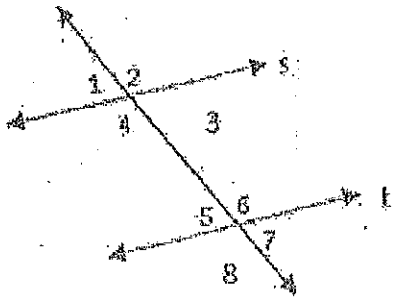
$m\angle 10$ = _____ $m\angle 7$ = _____

$m\angle 9$ = _____ $m\angle 16$ = _____



20. Find the value of x given that $s \| t$

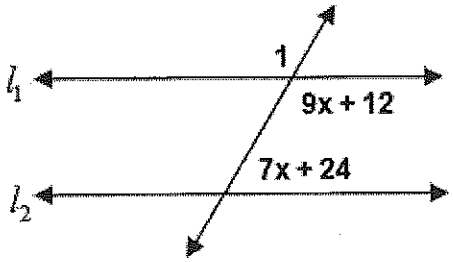
(A) $m\angle 4 = 77°$, $m\angle 8 = 4x + 57$



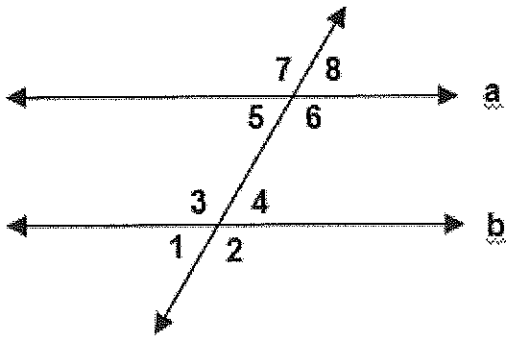
(B) $m\angle 1 = 6x - 5$, $m\angle 7 = 115°$

21.

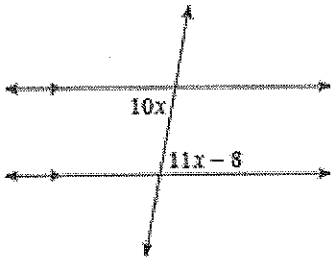
Given $l_1 \| l_2$, find the $m\angle 1$.



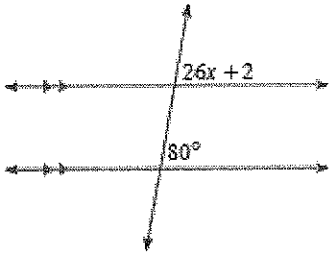
22. In the diagram, if $a \| b$ and $m < 1 = 43°$, what is $m < 7$?



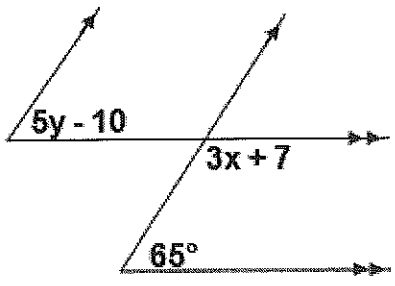
23. Find the val ue of x.



24. Find the value of x.



25. Find the value of x and y.



26. If $\Delta ABC \cong \Delta DEF$,

(a) **Name all the corresponding angles:**

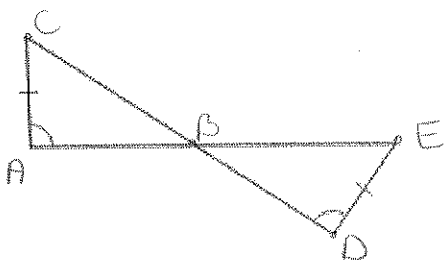
(b) **Name all the corresponding sides:**

27.

(A) If $\Delta TGS \cong \Delta KEL$, which angle in ΔKEL corresponds to $\angle T$?

(B) If $\Delta TGS \cong \Delta KEL$, which angle in ΔTGS corresponds to $\overline{EK}$?

28.

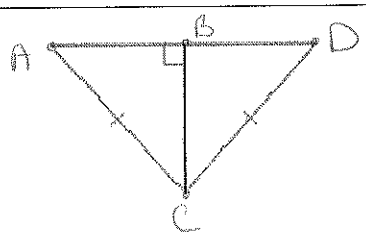


(a) What theorem or postulate proves that the triangles are congruent?

Circle one: SAS SSS AAS ASA HL

(b) Write a congruence statement

29.

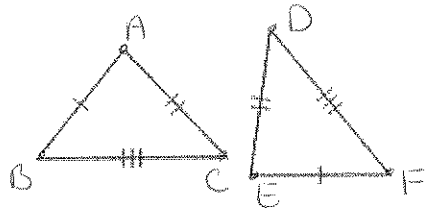


(a) What theorem or postulate proves that the triangles are congruent?

Circle one: SAS SSS AAS ASA HL

(b) Write a congruence statement

30.

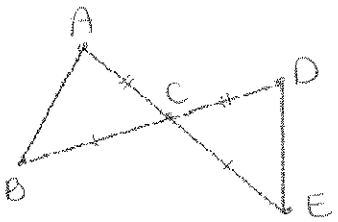


(a) What theorem or postulate proves that the triangles are congruent?

Circle one: SAS SSS AAS ASA HL

(b) Write a congruence statement

31.

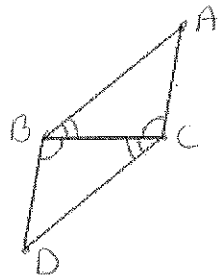


(a) What theorem or postulate proves that the triangles are congruent?

Circle one: SAS SSS AAS ASA HL

(b) Write a congruence statement

32.



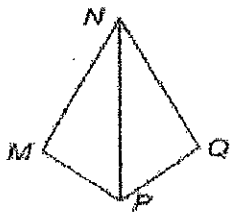
(a) What theorem or postulate proves that the triangles are congruent?

Circle one: SAS SSS AAS ASA HL

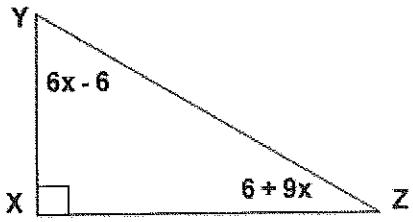
(b) Write a congruence statement.

33. Quadrilateral MNQP is made of two congruent triangles. NP bisects $\angle N$ and $\angle P$. In the quadrilateral, $m\angle N = 38°$ and $m\angle P = 104°$.

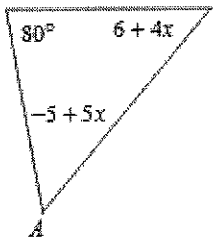
What is the measure of $\angle Q$?



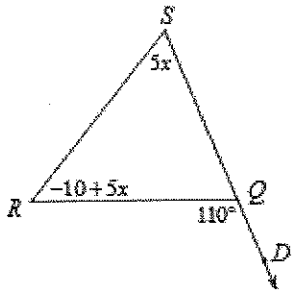
34. Triangle XYZ is a right triangle. Find $m\angle Y$.



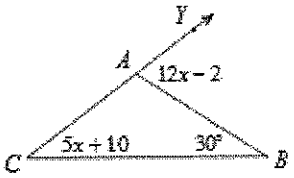
35. $m < A =$



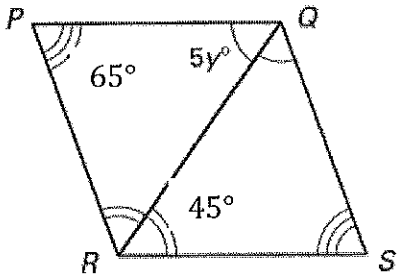
36. Find $m\angle S$.



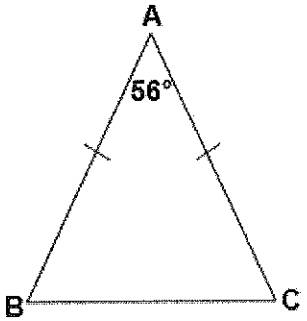
37. Find $m\angle C$.



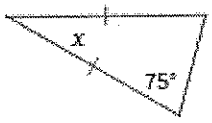
38. Find the value of y.



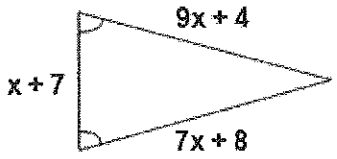
39. In the triangle, $m\angle B =$ ____.



40. Find the value of x.

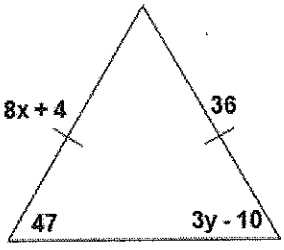


41. (a) Find the value of x.

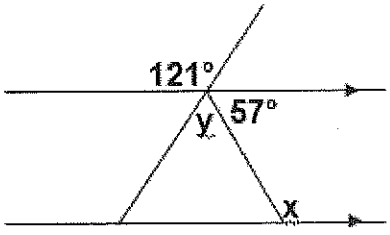


(b) Find the perimeter of the triangle.

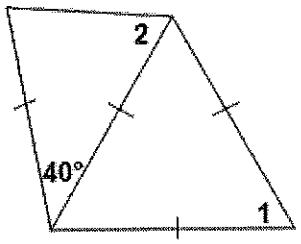
42. Find the value of x and y.



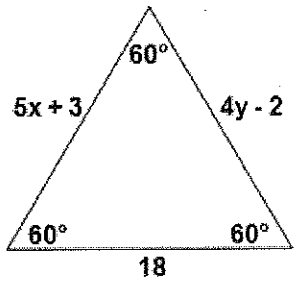
43. Find the value of x and y.



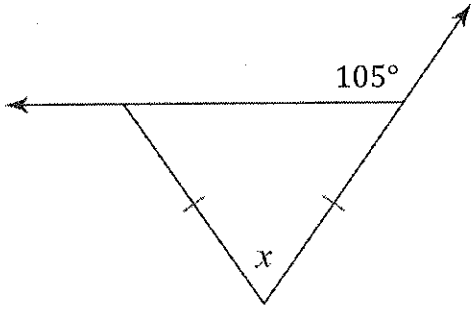
44. $m < 1 =$ and $m < 2 =$



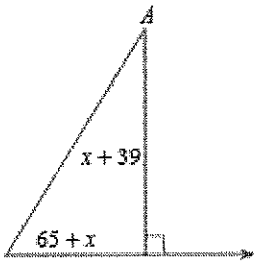
45. Find the value of x and y.



46. Find the value of x.



47. Find $m < A$.



48. Simplify.

(A) $\sqrt{12}$

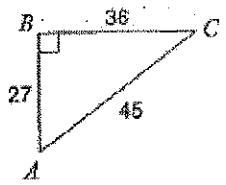
(B) $8\sqrt{200}$

(C) $5 \cdot 2\sqrt{8}$

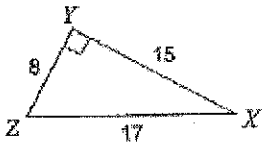
(D) $\dfrac{5}{\sqrt{3}}$

49. Find the value of each trigonometric ratio.

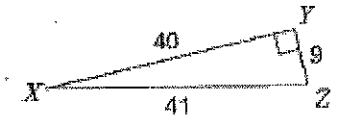
(A) $\sin C$



(B) $\cos Z$

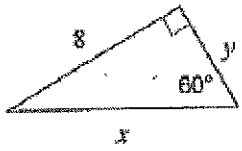


(C) $\tan X$

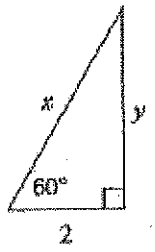


50. Use **Special Right Triangles** to solve the following problems. Answers should be in simplest radical form.

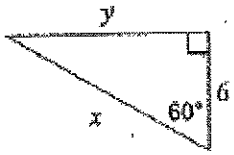
(A)



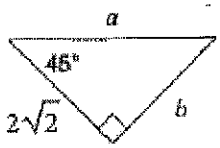
(B)



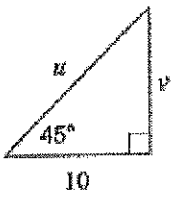
(C)



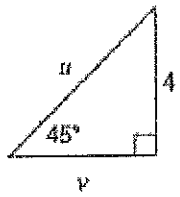
(D)



(E)



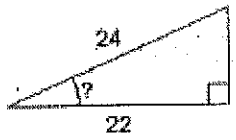
(F)



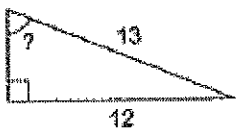
51. Use **SOH-CAH-TOA** to find the missing side or angle. Round all answers to the nearest tenth.

(A)

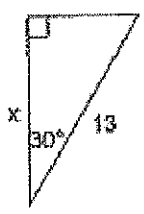
(B)



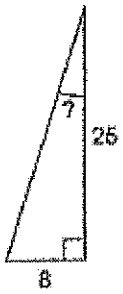
(C)



(D)



(E)



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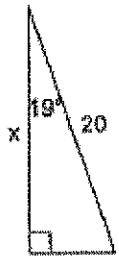
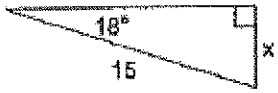
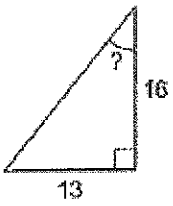


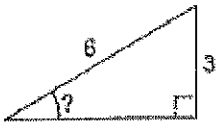
(G)



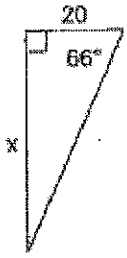
(H)



(I)



(J)



52. A spectator in the stands spots the team mascot on the field at an angle of depression of $46°$. If the spectator is sitting 35 feet above the ground, what is the horizontal distance between the spectator and the mascot?

53. The angle of elevation from a soccer ball on the ground to the rop of the goal is $34°$. If the goal is 8 feet tall, what is the distance from the ball to the goal?

54. Jada is standing 10 feet from the base of a tree and spots a nest sitting on a branch. The angle of elevation from the ground where she is standing to the nest is $55°$. Find the height of the nest.

55. A surfer is riding a 7 foot wave. The angle of depression from the surfer to the shorline is $10°$. What is the distance from the surfer to the shoreline?

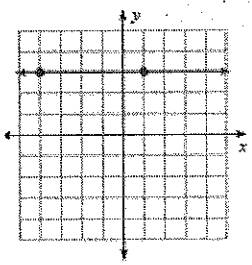
56. Given the equation $y = \frac{3}{4}x - 10$

(a) What would be the slope of a parallel line to the given equation?

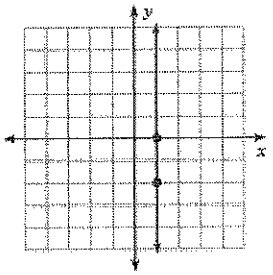
(b) What would be the slope of a perpendicular line to the given equation?

57. . What is the slope of each line.

(a)



(b)



58. Find the equation of the line through the point (-2, 3) and has a slope of $-\frac{1}{2}$.

59. Find the equation of the line through the point (-3, 5) and has a slope of -3.

Distance Formula = $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$	**Slope** = $\frac{y_1 - y_2}{x_1 - x_2}$	**Midpoint** = $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$

Find each of the following given the points: **A (6, 6)** **B (3, 9)** **C (-6, 1)** **D (9, 11)**

60.) Distance between A and C.

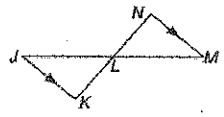
61.) Slope of $\overleftrightarrow{AB}$.

62.) Slope of the line perpendicular to $\overleftrightarrow{AD}$

63.) Find the coordinates of the midpoint of $\overline{BC}$

64.

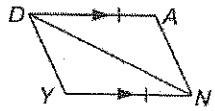
Given: L is the midpoint of $\overline{JM}$.
$\overline{JK} \parallel \overline{NM}$
Prove: $\triangle JKL \cong \triangle MNL$
Proof:



Statements	Reasons
1. L is the midpoint of $\overline{JM}$.	1. Given
2. _____	2. Definition of midpoint
3. $\overline{JK} \parallel \overline{MN}$	3. Given
4. $\angle JKL \cong \angle MNL$	4. _____
5. _____	5. _____
6. $\triangle JKL \cong \triangle MNL$	6. _____

65.

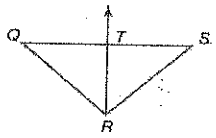
Given: $\overline{DA} \parallel \overline{YN}$
$\overline{DA} \cong \overline{YN}$
Prove: $\angle NDY \cong \angle DNA$
Proof:



Statements	Reasons
1. $\overline{DA} \parallel \overline{YN}$	1. Given
2. _____	2. Alt. int. $\measuredangle$ are $\cong$.
3. $\overline{DA} \cong \overline{YN}$	3. Given
4. _____	4. Reflexive Property
5. $\triangle NDY \cong \triangle DNA$	5. _____
6. $\angle NDY \cong \angle DNA$	6. _____

66.

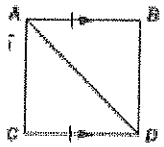
Given: $\triangle QRS$ is isosceles with $\overline{QR} \cong \overline{SR}$.
$\overline{RT}$ bisects $\overline{QS}$ at point T.
Prove: $\triangle QRT \cong \triangle SRT$



Statement	reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

67.

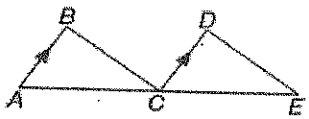
Given: $AB = CD$, $\overline{AB} \parallel \overline{CD}$
Prove: $\triangle ACD \cong \triangle CAB$



Statement	Reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

68.

Given: $\overline{CD}$ bisects $\overline{AE}$, $\overline{AB} \parallel \overline{CD}$
$\angle E \cong \angle BCA$
Prove: $\triangle ABC \cong \triangle CDE$



Statement	Reason
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.

69.

Given: $\angle Z \cong \angle C$
$\overline{AK}$ bisects $\angle ZKC$.
Prove: $\triangle AKZ \cong \triangle AKC$

Statement	Reason
1.	1.
2.	2.
3	3.
4.	4.
5.	5.