Unit 1: Geometry Basics

Major Concepts

- Naming basic geometric figures (points, lines, planes, rays, angles)
- Finding the length of a line segement
- Finding the measure of an angle
- Special angle pairs (Supplementary, complementary, linear pair, adjacent, vertical)
- Midpoint
  - On a number line
  - On the coordinate plane
- Distance Formula

Important Formulas or Procedures:

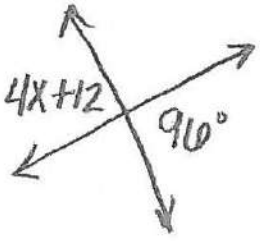
Examples:

Ex). If $EF = 2x - 12$, $FG = 3x - 15$, and $EG = 23$. Find the values of x, FG, and EF.

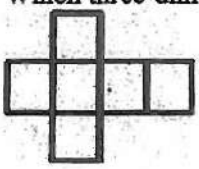
Ex) Find the coordinates of the midpoint of the segment with endpoints $A(2,3)$ and $B(-10,12)$.

Ex) Find the distance between $P(8,7)$ and $Q(13,2)$

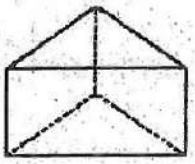
Ex) Find x.



1. Which three-dimensional figure matches this net?

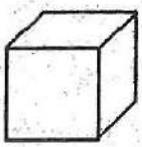


A.

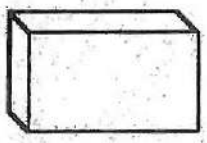


C.

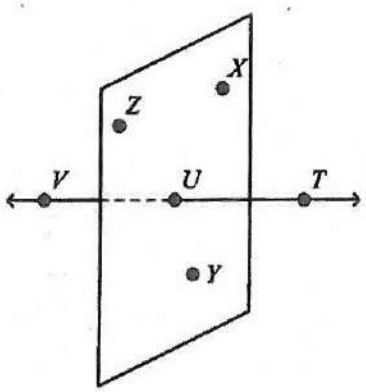
B.



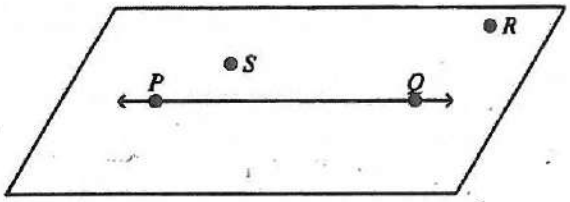
D.



2. What are the names of three collinear points?

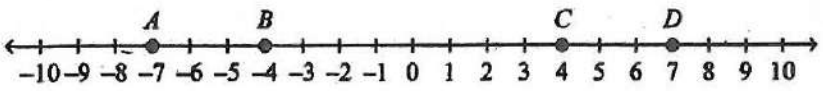


3. Name the line and plane shown in the diagram.

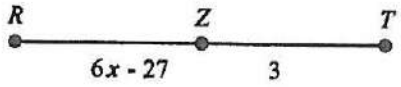


4. Name the ray in the figure.

5. What is the length of $\overline{AD}$?



6. If Z is the midpoint of $\overline{RT}$, what are x, RZ, and RT?



7. Which angle is an obtuse angle?

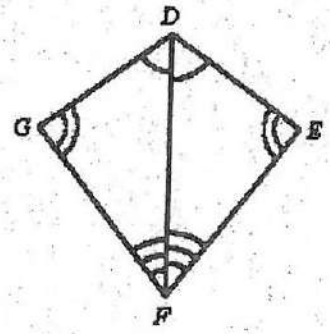
A.

B.

C.

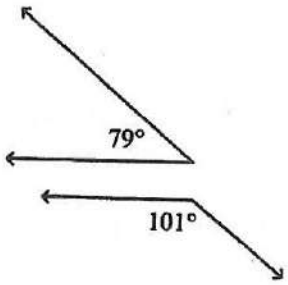
D.

8. Complete the statement.



$\angle EDF \cong$?

9. How are the two angles related?



Drawing not to scale

A. adjacent
B. supplementary
C. vertical
D. complementary

10. Supplementary angles are two angles whose measures have a sum of ____.
Complementary angles are two angles whose measures have a sum of ____.

11. Find the coordinates of the midpoint of the segment whose endpoints are $H(8, 6)$ and $K(6, 2)$.

12. Find the distance between points $P(9, 8)$ and $Q(7, 2)$ to the nearest tenth.

Unit 2: Parallel Lines Cut by a Transversal

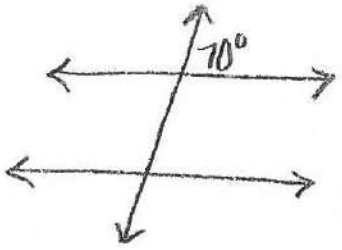
Major Concepts

- Identifying
  - Alternate Interior Angles
  - Alternate Exterior Angles
  - Same-side Interior Angles
  - Corresponding Angles
- Using parallel lines to find angle measures

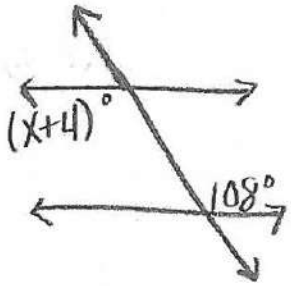
Important Formulas or Procedures:

Examples:

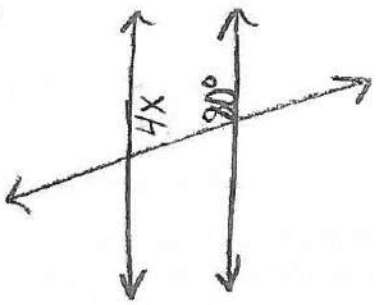
Ex) Find the missing angle measures.



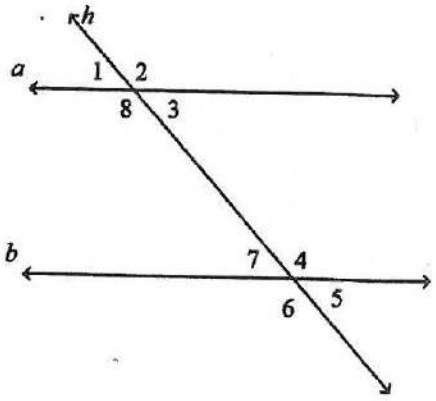
Ex) Find the value of x.



Ex) Find the value of x.



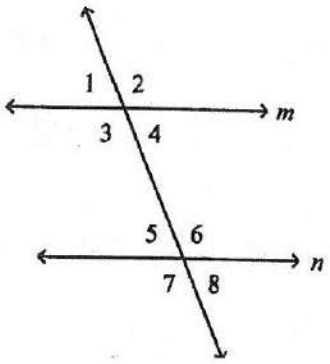
Use the diagram to find the following.



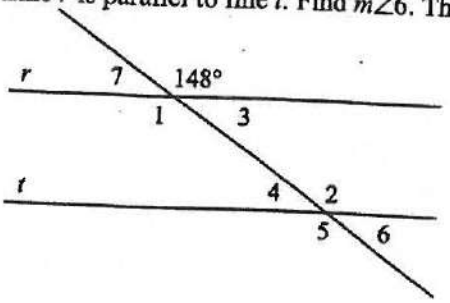
13. Identify a pair of alternate exterior angles.

14. What are three pairs of corresponding angles?

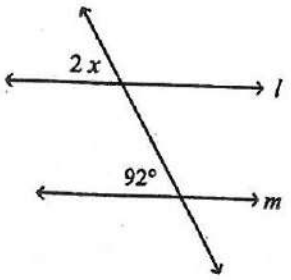
15. What is the relationship between $\angle 2$ and $\angle 6$?



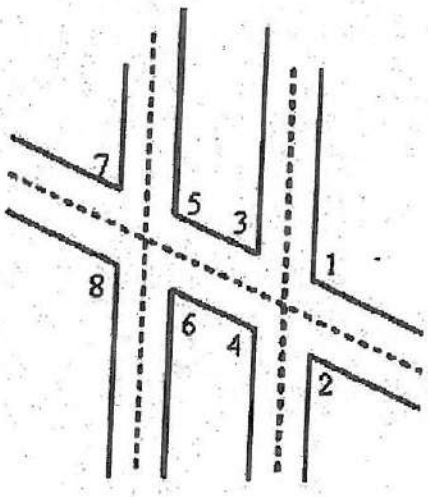
17. Line r is parallel to line t. Find $m\angle 6$. The diagram is not to scale.



18. Find the value of x. $l \parallel m$. The diagram is not to scale.



This diagram of airport runway intersections shows two parallel runways. A taxiway crosses both runways.



16. How are $\angle 7$ and $\angle 3$ related?
    A. alternate interior angles
    B. same-side interior angles
    C. corresponding angles
    D. none of these

Unit 3: Equations of Parallel and Perpendicular Lines

Major Concepts

- Slope
- Y-intercept
- Slope-Intercept Form
- Parallel Lines
- Perpendicular Lines

Important Formulas or Procedures:

Examples:

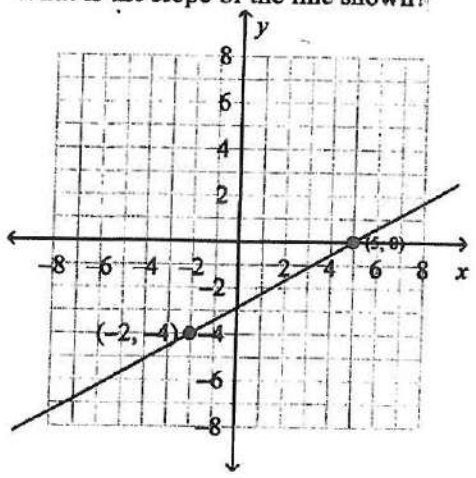
Ex) Find the slope of the line that passes through $(4,-12)$ and $(-2,6)$

Ex) Write the equation of the line described in the previous example.

Ex) Write the equation of a line parallel to the one above that passes through $(1,2)$

Ex) Write the equation of a line perpendicular to the line in example 2 that passes through $(3,6)$.

19. What is the slope of the line shown?



20. Write an equation in slope-intercept form of the line through point $P(-4, -2)$ with slope 5.

A. $y = 5x + 18$
B. $y + 2 = 5(x + 4)$
C. $y + 4 = 5(x + 2)$
D. $y = 5x - 2$

21. Write an equation that is parallel to $y = \frac{2}{3}x - 7$.

Unit 4: Triangles

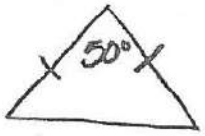
Major Concepts

- Classifying Triangles (acute, obuse, right, equiangular, scalene, isosceles, equilateral)
- The angles of a triangle add to 180
- Congruent figures and congruency statements
- Congruent triangles shortcuts (SSS, SAS, ASA, AAS or SAA)
- Isosceles triangles
- Equilateral triangles
- Inequalities in triangles

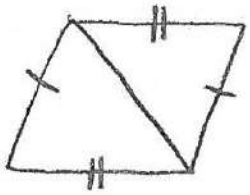
Important Formulas or Procedures:

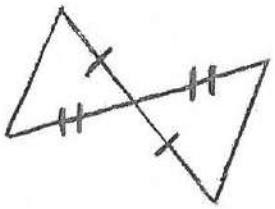
Examples:

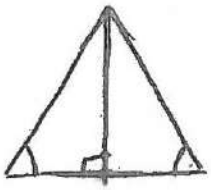
Ex) Find the missing angles

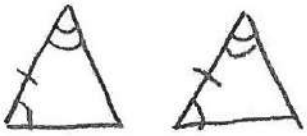


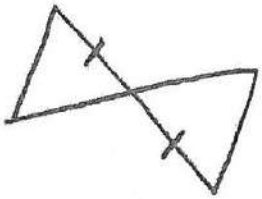
Ex) Name the theorem or postulate that lets you immediately conclude the triangles are congruent



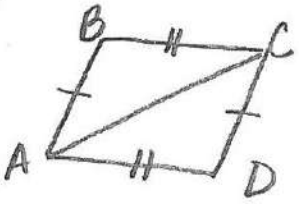




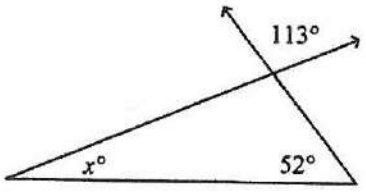




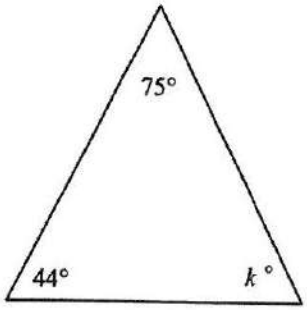
Ex) Write a congruency statement.



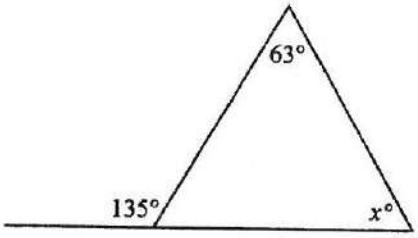
22. Find the value of x. The diagram is not to scale.



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

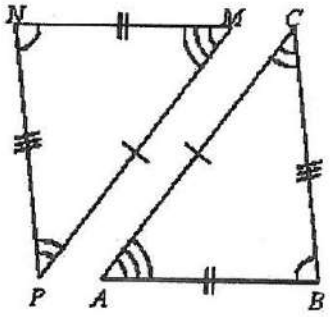


24. Find the value of x. The diagram is not to scale.

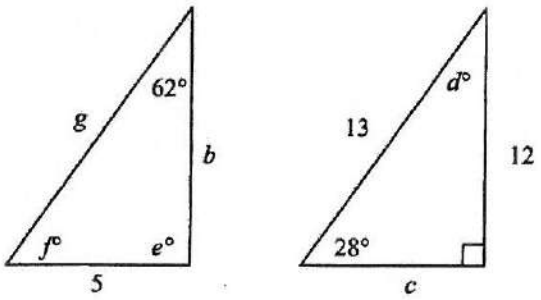


25. If $BCDE$ is congruent to $OPQR$, then $\overline{CD}$ is congruent to __?__.

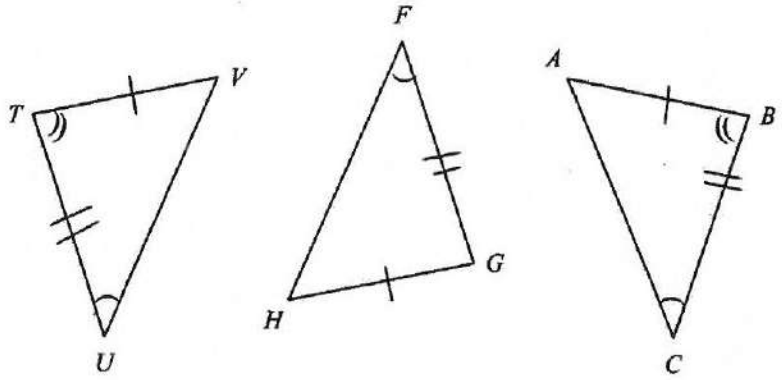
26. $\angle PNM \cong$ __?__



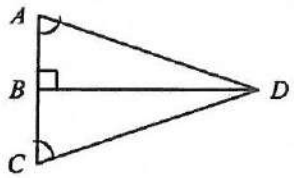
27. The two triangles are congruent as suggested by their appearance. Find the value of f. The diagrams are not to scale.



28. Which triangles are congruent by ASA?



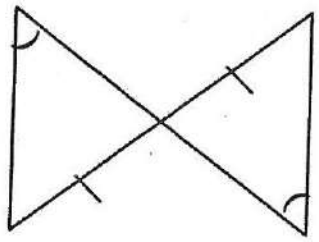
29. Name the theorem or postulate that lets you immediately conclude $\Delta ABD \cong \Delta CBD$.



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

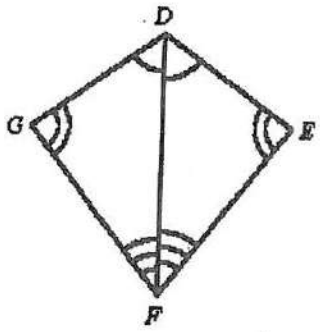
Name: _____ ID: A

30. Can you use the SAS Postulate, the AAS Theorem, or both to prove the triangles congruent?

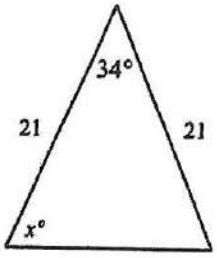


A. SAS only
B. AAS only
C. either SAS or AAS
D. neither

31. From the information in the diagram, can you prove $\Delta FDG \cong \Delta FDE$? Explain.



32. What is the value of x?



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Unit 5: Quadrilaterals

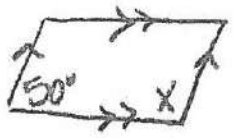
Major Concepts

- Finding angles of polygons
- Properties of
  - Parallelograms
  - Rectangles
  - Rhombi
  - Squares
  - Trapezoids
  - Isosceles Trapezoids
  - Kites

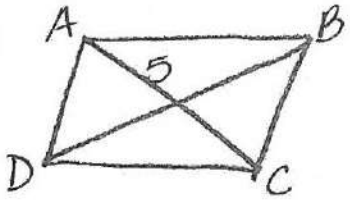
Important Formulas or Procedures:

Examples:

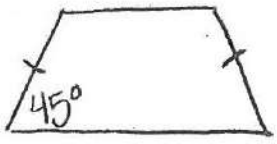
Ex) Find the interior angle sum, the measure of one interior angle, the exterior angle sum, and the measure of one exterior angle of a nonagon.

Ex) 

Find x.

Ex) 

Find AC.

Ex) 

Find the missing angles of the trapezoid and the length of its midsegment.

33. What is the sum of the angle measures of a 36-gon?

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

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

35. Complete this statement: A polygon with all sides the same length is said to be ____.

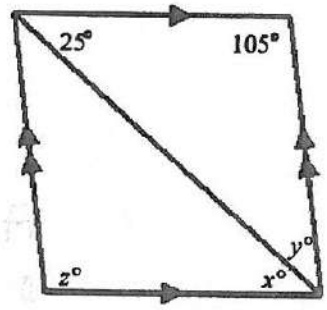
A. regular B. equilateral C. equiangular D. convex

36. The sum of the measures of two exterior angles of a triangle is 251. What is the measure of the third exterior angle?

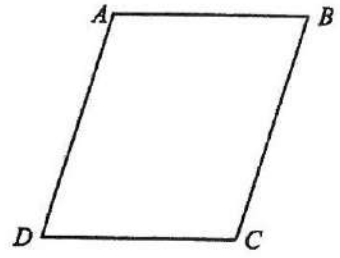
37. Complete this statement: The sum of the measures of the exterior angles of an n-gon, one at each vertex, is ____.

A. $(n-2)180$ B. 360 C. $\frac{(n-2)180}{n}$ D. $180n$

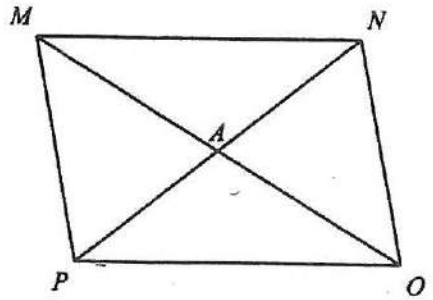
38. Find the values of the variables in the parallelogram. The diagram is not to scale.



39. $ABCD$ is a parallelogram. If $m\angle CDA = 82$, then $m\angle BCD =$ ___?___. The diagram is not to scale.

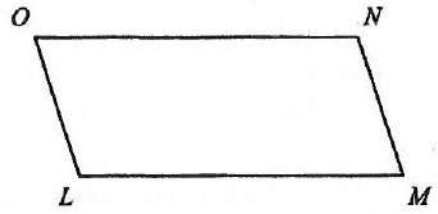


40. Find AM in the parallelogram if $PN = 9$ and $AO = 4$. The diagram is not to scale.



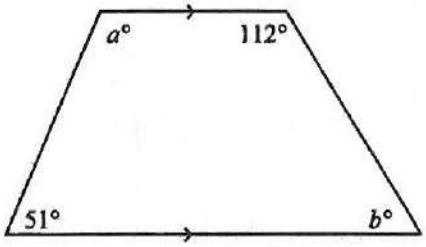
Name: _____ ID: A

41. *LMNO* is a parallelogram. If $NM = x + 13$ and $OL = 2x + 7$, find the value of x and then find NM and OL.

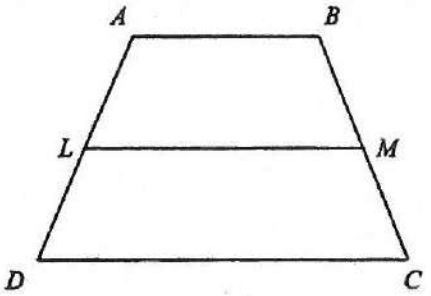


42. Based on the information in the diagram, can you prove that the figure is a parallelogram? Explain.

43. Find the values of a and b. The diagram is not to scale.



44. $\overline{LM}$ is the midsegment of $\square ABCD$. $AB = 25$ and $DC = 77$. What is LM?



Unit 6: Similarity

Major Concepts

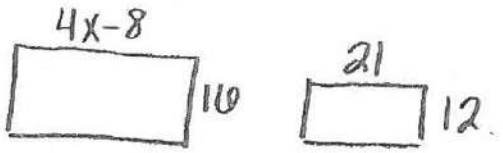
- Ratios
- Solving Proportions
- Extended Proportions
- Similar Polygons
- Similarity Statement
- Scale Factor

Important Formulas or Procedures:

Examples:

Ex) The measure of two supplementary angles are in the ratio 29:7. What are the degree measures?

Ex) Find the value of x.



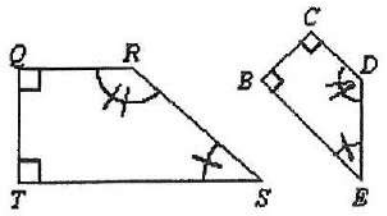
Ex) In a scale drawing of the solar system, the scale is 1mm = 500km. For a planet with a diameter of 9000 kilometers, what should be the diameter of the drawing of the planet?

45. The measure of two complementary angles are in the ratio 1 : 5. What are the degree measures of the two angles?

What is the solution of each proportion?

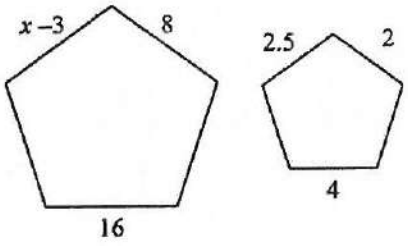
46. $\frac{6}{a} = \frac{18}{24}$

47. Figure $TQRS \sim BCDE$. What are the pairs of congruent angles?

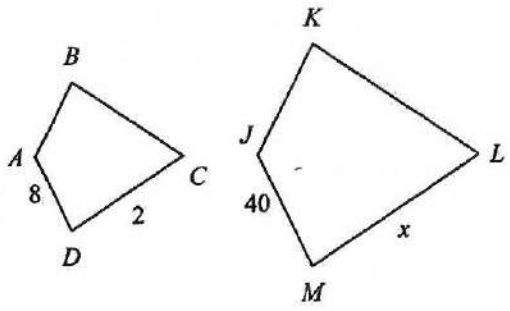


The polygons are similar, but not necessarily drawn to scale. Find the value of x.

48.



49.



50. In a diagram of a landscape plan, the scale is 1 cm = 10 ft. In the diagram, the trees are 2.9 centimeters apart. How far apart should the actual trees be planted?