Name Answers Date

Chapter 6 Review

Complete each statement.

1. The sum of the angle measures of an octagon is 1080°. $(8-2)180$

2. Each angle of a regular pentagon measures 108°? $\frac{(5-2)180}{5}$

3. The length of a midsegment of a trapezoid is the average of the lengths of the bases.

4. The length of a midsegment between two sides of a triangle is half the length of the third side.

5. The sum of the measures of the angles of a heptagon is 900°. $(7-2)180$

6. The measure of one angle in a regular decagon is 144°. $\frac{(10-2)180}{10}$

7. The midsegment of a trapezoid is parallel to the two bases.

State whether each statement is always true, sometimes true, or never true.

8. A quadrilateral with two pairs of opposite sides congruent is a parallelogram.

Always

9. A quadrilateral with one pair of opposite sides congruent and one pair parallel is a parallelogram.

Sometimes

10. A rectangle is a rhombus.

Sometimes

11. The midsegment of a trapezoid is longer than each base.

Never

12. Base angles of a trapezoid are congruent.

Sometimes

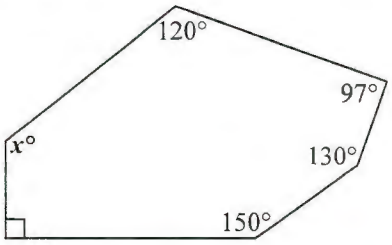
13. Put a check in the box if the shape always has the given property.

Property	Parallelogram	Rectangle	Rhombus	Square	Kite	Trapezoid
All sides are ≅.			✓	✓		
Both pairs of opp. sides are ≅.	✓	✓	✓	✓		
Both pairs of opp. sides are ∥.	✓	✓	✓	✓		
Exactly 1 pair of opp. sides ∥.						✓
All angles are ≅.		✓		✓		
Exactly 1 pair of opp. angles ≅.					✓	
Diagonals perpendicular.			✓	✓	✓	
Diagonals are ≅.		✓		✓		
Diagonals bisect each other.	✓	✓	✓	✓		

14. How many sides does a regular polygon have if each exterior angle measures 30°?

$S = \frac{360}{30} = 12$ sides

15. Find the value of x.



$x + 120 + 97 + 130 + 150 + 90 = 720$

$x + 587 = 720$

$x = 133°$

16. How many sides does a convex polygon have if the sum of all of its angles is 1980°?

$1980 = (n-2)180$

$11 = n-2$

$13 = n$

13 sides

17. The measures of the interior angles of a quadrilateral are $x°$, $2x°$, $3x°$, $4x°$. What is the measure of largest interior angle?

$x + 2x + 3x + 4x = 360$

$10x = 360$

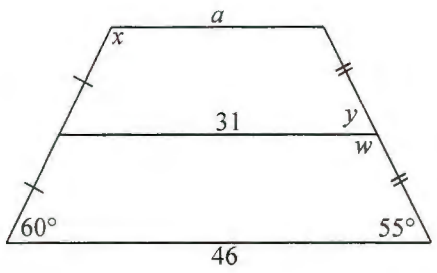
$x = 36$

$4(36) = 144°$

18. In the trapezoid, find the values of

$a =$ 46 $y =$ 55°

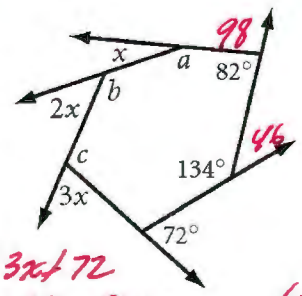
$x =$ 120° $w =$ 125°



19. Find the missing values.

$x =$ 24° $a =$ 156°

$b =$ 132° $c =$ 108°



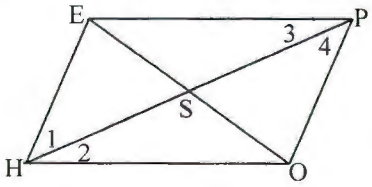
$x + 2x + 3x + 72 + 46 + 98 = 360$

$6x + 216 = 360$

$6x = 144$

$x = 24$

HOPE is a parallelogram. Find the lengths or angle measures.



20. If $m\angle 3 = 35°$ and $m\angle 4 = 40°$, then $m\angle 2 =$ 35°

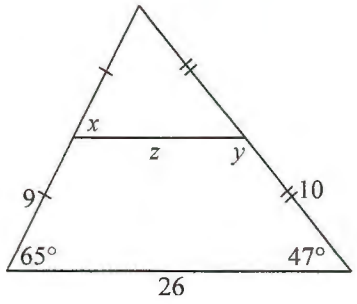
21. If $m\angle HEP = 108°$, then $m\angle EPO =$ 72°

22. If $HP = 8$, then $SP =$ 4

23. Find the values of

$x =$ 65° $y =$ 133°

$z =$ 13



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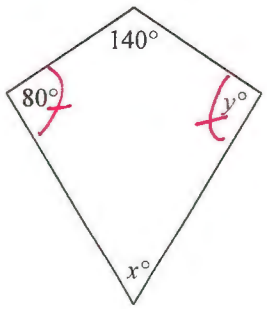
24. If the figure below is a kite as shown, find the missing values.

$x =$ 60° $y =$ 80°



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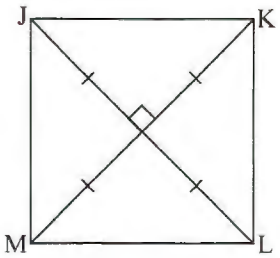
25. Is enough information given in the diagram to show that the quadrilateral *JKLM* is a square? Explain your reasoning.



Yes. A square is the only quadrilateral that divides into 4 congruent right triangles.

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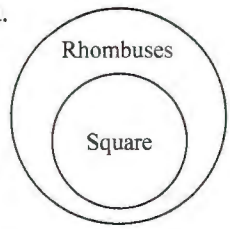
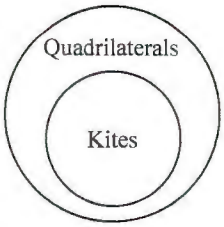
26. Which Venn diagram is NOT correct?

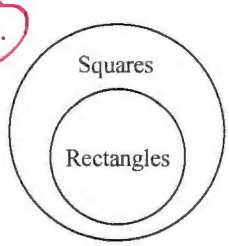
a.



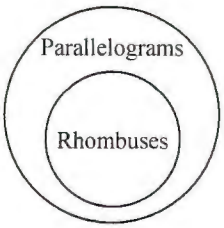
b.



c.



d.



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27. Name the facts that you know about all parallelograms

a. Two pairs of // sides

b. Two pairs of opp. ≅ sides

c. Opp. angles ≅

d. Diagonals bisect each other

e. Consecutive angles supplementary

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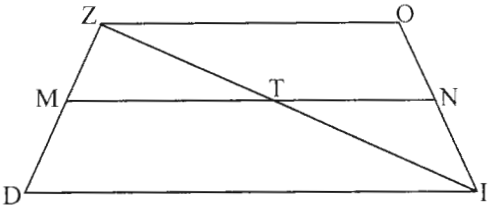
28. Rhombus diagonals have the following properties which may or may not be true for all parallelograms

a. Diagonals ⊥

b. Diagonals bisect angles

Use the following diagram for problems #29-31.

$\overline{MN}$ is the midsegment of trapezoid ZOID.

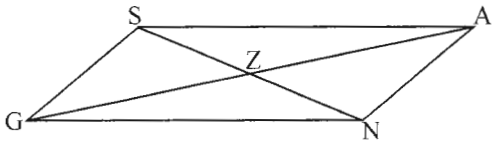


29. If ZO=8 and MN=11, then DI= 14 .

30. If ZO=8, then TN= 4 .

31. If trapezoid ZOID is isosceles and $m\angle D = 80°$, then $m\angle O =$ 100° .

In problems #32-35, you could prove that quadrilateral SANG is a parallelogram if one more fact, in addition to those stated, were given. State the fact.



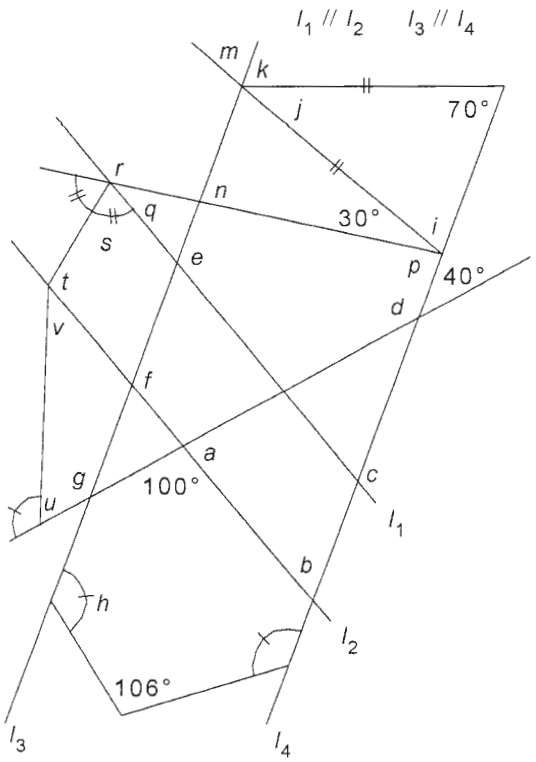
32. $GN = 9$; $NA = 5$; $SA = 9$ GS = 5

33. $\angle ASG \cong \angle GNA$ ∠NAS ≅ ∠SGN

34. $\overline{SZ} \cong \overline{NZ}$ $\overline{GZ} \cong \overline{AZ}$

35. $\overline{SA} \parallel \overline{GN}$; $SA = 17$ GN = 17

36. Find the missing angles.



$a =$ 80° $k =$ 70°

$b =$ 60° $m =$ 70°

$c =$ 120° $n =$ 80°

$d =$ 140° $p =$ 80°

$e =$ 120° $q =$ 40°

$f =$ 120° $r =$ 140°

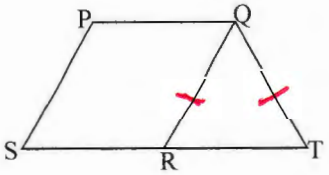
$g =$ 140° $s =$ 70°

$h =$ 127° $t =$ 110°

$i =$ 70° $u =$ 53°

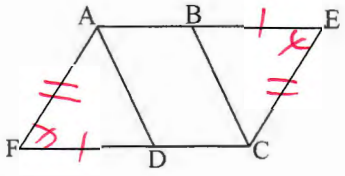
$j =$ 40° $v =$ 47°

37) Given: Parallelogram PQRS
$\overline{QR} \cong \overline{QT}$
Prove: $\angle S \cong \angle T$



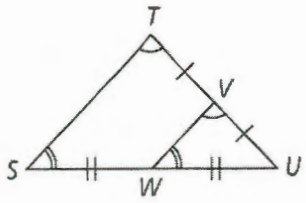
Statement	Reasons
1) Parallelogram PQRS	Given
2) $\overline{QR} \cong \overline{QT}$	Given
3) $\angle S \cong \angle PQR$	Opp. Angles Theorem
4) $\overline{PQ} \parallel \overline{RT}$ (and $\overline{SR}$)	Def. of a Parallelogram
5) $\angle PQR \cong \angle TRQ$	AIA
6) $\angle S \cong \angle TRQ$	Substitution
7) $\angle TRQ \cong \angle T$	Base Angles theorem
8) $\angle S \cong \angle T$	Substitution (or Transitive)

38) Given: Parallelogram AECF
$\overline{FD} \cong \overline{BE}$
Prove: $\overline{AD} \cong \overline{BC}$



Statement	Reasons
1) Parallelogram AECF	Given
2) $\overline{FD} \cong \overline{BE}$	Given
3) $\overline{AF} \cong \overline{CE}$	Opposite Sides Theorem
4) $\angle F \cong \angle E$	Opposite Angles Theorem
5) $\triangle AFD \cong \triangle CEB$	SAS
6) $\overline{AD} \cong \overline{BC}$	CPCTC

39) Given: $\angle TSW \cong \angle VWU$
$\angle STV \cong \angle WVU$



Prove: $\overline{TS} \parallel \overline{VW}$

Assume temporarily that $\overline{TS}$ is not $\parallel$ to $\overline{VW}$

Then by the Converse of the Corr. Angles Postulate, $\angle TSW$ and $\angle VWU$ cannot be $\cong$.

This contradicts the given information that $\angle TSW \cong \angle VWU$.

Therefore, $\overline{TS} \parallel \overline{VW}$.

40) By making an indirect proof, show that a quadrilateral cannot have all obtuse angles.

Assume temporarily that all the angles in a quadrilateral are obtuse. By definition, an obtuse angle is greater than 90°. However, according to the Polygon Sum Formula, all the angles would add up to 360°. If all the angles were obtuse, this would mean all the angles would add up to a sum that is greater than 360°. This contradicts the previous statement, and shows that the initial assumption is false. Therefore, a quadrilateral cannot have all obtuse angles.