5 REVIEW PROBLEMS

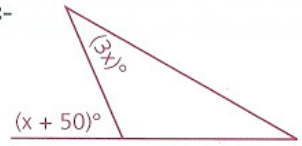
Problem Set A

1 Give the most descriptive name for

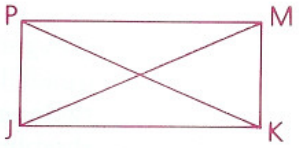
- **a** A quadrilateral whose consecutive sides measure 15, 18, 15, and 18
- **b** A quadrilateral whose consecutive sides measure 15, 18, 18, and 15
- **c** A quadrilateral with consecutive angles of 30°, 150°, 110°, and 70°
- **d** A quadrilateral whose diagonals are perpendicular and congruent and bisect each other
- **e** A quadrilateral whose congruent diagonals bisect each other and bisect the angles

2 ABCD is a ▱.
AB = 2x + 6,
BC = 8,
CD = x + 8
Find the perimeter of ABCD.

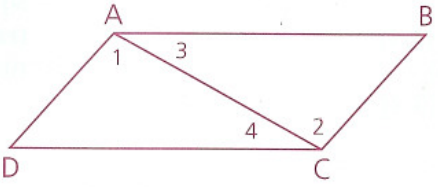
3 Write an inequality stating the restrictions on x.



4 JKMP is a rectangle.
PK = 0.2x,
JM = x − 12
Find PK.



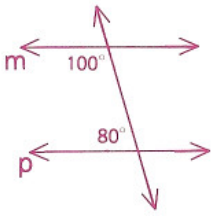
5 Given: ∠1 ≅ ∠2;
ABCD is not a ▱.
Prove: ∠3 ≇ ∠4



6 In a parallelogram, the measure of one of the angles is twice that of another. Are these opposite angles or consecutive angles? Find the measure of each angle of the parallelogram.

7 In each of these diagrams, is m ∥ p?

a



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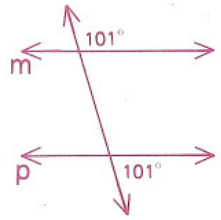

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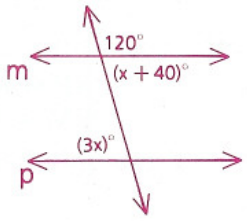
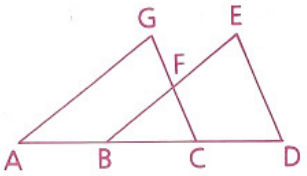


8 Name five properties of a parallelogram.

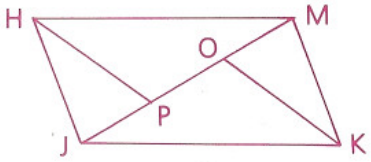
9 Given: $\overline{AB} \cong \overline{CD}$, $\overline{AG} \cong \overline{BE}$, $\overline{AG} \parallel \overline{BE}$

Conclusion: $\overline{GC} \parallel \overline{ED}$

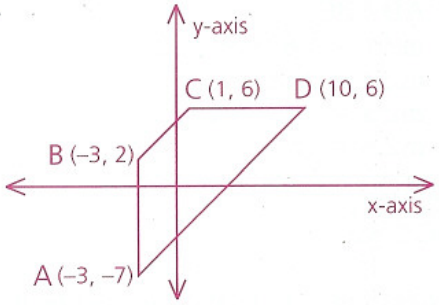


10 Given: HJKM is a ▱.
$\angle JHP \cong \angle MKO$

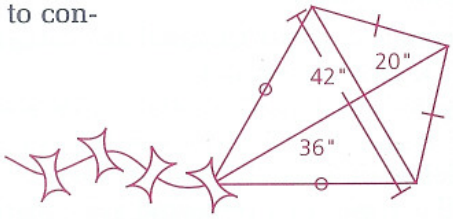
Conclusion: $\overline{MP} \cong \overline{JO}$



11 Show that ABCD is an isosceles trapezoid.



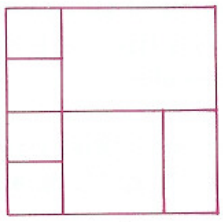
12 Find the area of the paper used to construct the kite.



13 Two polygons are selected at random from a group consisting of a nonisosceles trapezoid, an isosceles trapezoid, and a parallelogram. Find the probability that both polygons have two pairs of congruent angles.

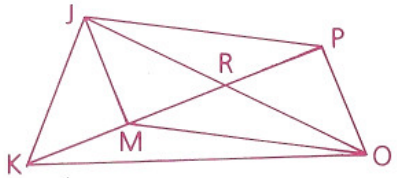
14 **a** How many squares appear to be in the figure at the right?

b How many rectangles?



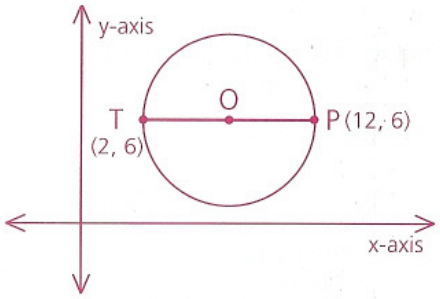
Review Problem Set A, *continued*

15 Given: $\overline{KR}$ is a median to $\overline{JO}$.
$\overline{RP} \cong \overline{KM}$,
$\overline{RM} \cong \overline{KM}$
Prove: JMOP is a $\square$.



16 In $\square$ ABCD, $\angle A = (2x + 6)°$ and $\angle B = (x + 24)°$. Find $m\angle C$.

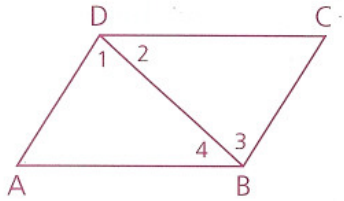
17 $\overline{TP}$ (a diameter) passes through the center of $\odot O$. Find the area of the circle to three decimal places.



Problem Set B

18 Given: $\overleftrightarrow{AD} \parallel \overleftrightarrow{BC}$,
$m\angle 1 = 5.63x + 2.42$,
$m\angle 2 = 2.1x$,
$m\angle 3 = 6x - 5.1$,
$m\angle 4 = 42$

a Find $m\angle 1$.
b Is $\overleftrightarrow{DC} \parallel \overleftrightarrow{AB}$?



19 If the statement is always true, write A; if sometimes true, write S; if never true, write N.

a If the diagonals of a quadrilateral are congruent, the quadrilateral is an isosceles trapezoid.
b If the diagonals of a quadrilateral divide each angle into two 45-degree angles, the quadrilateral is a square.
c If a parallelogram is equilateral, it is equiangular.
d If two of the angles of a trapezoid are congruent, the trapezoid is isosceles.

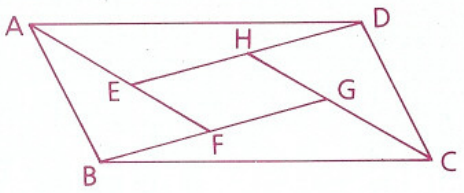
20 Prove: The figure produced by joining the consecutive midpoints of a parallelogram is a parallelogram.

21 Prove: If the bisector of an exterior angle formed by extending one of the sides of a triangle is parallel to a side of the triangle, the triangle is isosceles.

22 What is the most descriptive name for the quadrilateral with vertices $(0, -6)$, $(-4, 2)$, $(4, 6)$, and $(8, -2)$? Justify your conclusion.

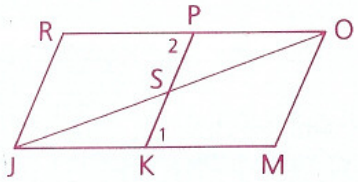
23 Given: EFGH is a $\square$.
$\overline{AE} \cong \overline{BF} \cong \overline{CG} \cong \overline{DH}$

Prove: ABCD is a $\square$.

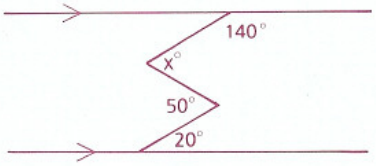


24 Given: P is the midpt. of $\overline{RO}$.
K is the midpt. of $\overline{JM}$.
$\angle 1 \cong \angle 2$,
$\overline{PS} \cong \overline{KS}$

Prove: RJMO is a $\square$.

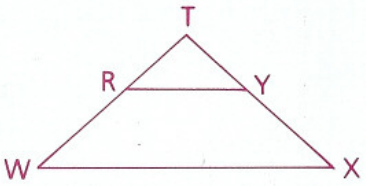


25 Find the value of x.

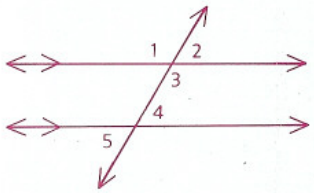


26 Given: $\triangle TWX$ is isosceles, with base $\overline{WX}$.
$\overline{RY} \parallel \overline{WX}$

Prove: RWXY is an isosceles trapezoid.



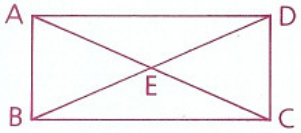
27 If two of the five labeled angles are chosen at random, what is the probability that they are supplementary?



Problem Set C

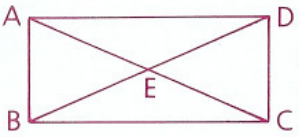
28 Given: $\overline{AB} \cong \overline{DC}$,
$\overline{AB} \perp \overline{BC}$, $\overline{DC} \perp \overline{BC}$

Prove: $\triangle DEC$ is isosceles.



29 Given: $\triangle AED$ and $\triangle BEC$ are isosceles, with congruent bases $\overline{AD}$ and $\overline{BC}$.

Prove: ABCD is a rectangle.



30 Given: Kite KITE

Find: The three possible values of the perimeter of KITE