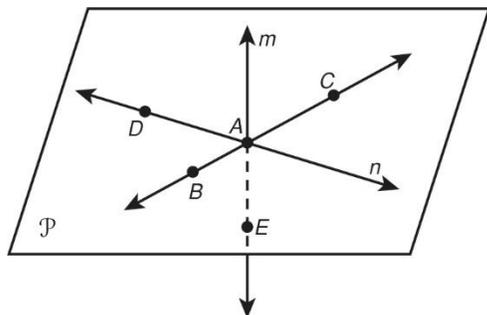


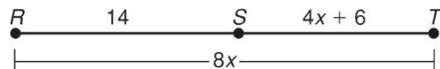
Chapter 1

Use the figure for Exercises 1–4.



- What is another name for plane P ?
A plane AE C plane BAD
B plane A D plane BAC
- Which segment is on line n?
F \overline{AD} H \overline{AC}
G \overline{BC} J \overline{BE}
- Which is the name of a ray with endpoint A?
A \overline{DA} C \overline{CA}
B \overline{BC} D \overline{AB}
- Name the intersection of plane P and line m.
F line n H AC
G point A J \overline{AE}

5. What is the measure of \overline{RT} ?

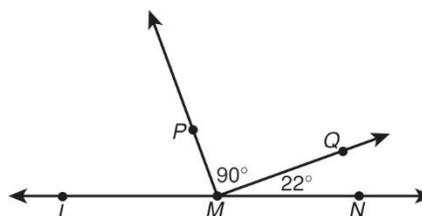


- A 5 C 26
B 16 D 40

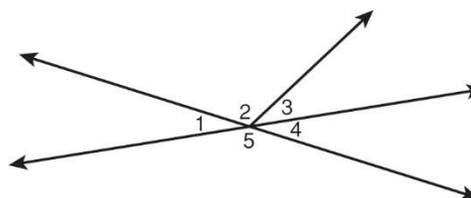
6. Given $LM = MP$ and L, M, and P are collinear, which of the following BEST describes the relationship of L, M, and P?

- F $\overline{LM} \cong \overline{MP}$
G M is the midpoint of \overline{LP} .
H M bisects \overline{LP} .
J All of the above

Use the figure for Exercises 7 and 8.



- Which term describes $\angle PMQ$?
A obtuse C right
B straight D acute
- What is $m\angle PMN$?
F 22° H 68°
G 90° J 112°
- Which angles are adjacent and form a linear pair?



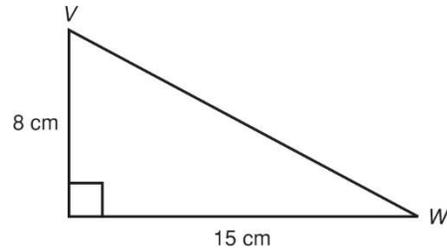
- A $\angle 1$ and $\angle 2$ C $\angle 2$ and $\angle 3$
B $\angle 3$ and $\angle 4$ D $\angle 1$ and $\angle 5$

10. If $m\angle A = (4x + 2)^\circ$, what is the measure of the complement of $\angle A$?

- F 90° H $(178 - 4x)^\circ$
G $(4x + 92)^\circ$ J $(88 - 4x)^\circ$

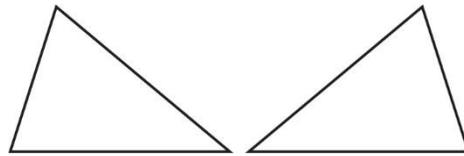
11. If $m\angle B = (3x - 16)^\circ$, what is the measure of the supplement of $\angle B$?
- A 180° C $(164 - 3x)^\circ$
 B $(196 - 3x)^\circ$ D $(16 - 3x)^\circ$
12. What is the perimeter of a square whose side is 8.2 centimeters?
- F 16.4 cm H 32.8 cm^2
 G 32.8 cm J 67.24 cm^2
13. What is the area of a triangle with a height of 3 inches and a base of 5.5 inches?
- A 8.25 in^2 C 16.5 in.
 B 8.5 in^2 D 16.5 in^2
14. A circle has a diameter of 8 feet. What is its approximate area?
- F 12.56 ft^2 H 50.24 ft^2
 G 25.12 ft^2 J 200.96 ft^2
15. Given \overline{GH} with endpoints $G(-11, 4)$ and $H(-1, -9)$, what are the coordinates of the midpoint of \overline{GH} ?
- A $(-12, -5)$ C $(-10, 13)$
 B $(-6, -2.5)$ D $(-5, 6.5)$
16. M is the midpoint of \overline{RS} . R has coordinates $(-12, 4)$, and M has coordinates $(1, -2)$. What are the coordinates of S ?
- F $(-5.5, -1)$ H $(13, 6)$
 G $(-11, 2)$ J $(14, -8)$
17. What is the distance from $M(-1, 6)$ to $N(11, 1)$?
- A 12 units C 13 units
 B $\sqrt{149}$ units D 169 units

18. What is the distance from V to W ?



- F 17 cm H 120 cm
 G 23 cm J 289 cm

19. What transformation is shown?



- A rotation C translation
 B reflection D image

20. Given a point in the coordinate plane, the rule $(x, y) \rightarrow (x + 2, y - 3)$ translates the point in which direction?
- F 2 units to the left and 3 units up
 G 3 units to the left and 2 units down
 H 3 units right and 2 units up
 J 2 units to the right and 3 units down

Chapter 2

1. What is the next item in the pattern?

-1, 2, -4, 8, . . .

- A -16 C 4
B -4 D 16

2. Which is a counterexample that shows that the following conjecture is false: "If $\angle 1$ and $\angle 2$ are supplementary, then one of the angles is obtuse"?

- F $m\angle 1 = 45^\circ$ and $m\angle 2 = 45^\circ$
G $m\angle 1 = 53^\circ$ and $m\angle 2 = 127^\circ$
H $m\angle 1 = 90^\circ$ and $m\angle 2 = 90^\circ$
J $m\angle 1 = 100^\circ$ and $m\angle 2 = 80^\circ$

3. removed

4. Given the conditional statement "If it is January, then it is winter in the United States," which is true?

- F the converse of the conditional
G the inverse of the conditional
H the contrapositive of the conditional
J Not here

5. What is the inverse of the conditional statement "If a number is divisible by 6, then it is divisible by 3"?

- A If a number is divisible by 3, then it is divisible by 6.
B If a number is not divisible by 6, then it is not divisible by 3.
C If a number is not divisible by 3, then it is not divisible by 6.
D If a number is not divisible by 6, then it is divisible by 3.

6. removed

7. removed

8. Which is a biconditional statement of the conditional statement "If $x^3 = -1$, then $x = -1$ "?

- F If $x = -1$, then $x^3 = -1$.
G $x^3 = -1$ if $x = -1$.
H $x^3 = -1$ if and only if $x = -1$.
J $x = -1 \rightarrow x^3 = -1$.

9. Which property is NOT used when solving $15 = 2x - 1$?

- A Reflex. Prop. of =
B Add. Prop. of =
C Div. Prop. of =
D Sym. Prop. of =

10. Identify the property that justifies the statement "If $\angle B \cong \angle A$, then $\angle A \cong \angle B$."

- F Sym. Prop. of =
G Reflex. Prop. of =
H Trans. Prop. of =
J Sym. Prop. of \cong

Use the partially completed two-column proof for Exercises 11 and 12.

Given: $m\angle 1 = 30^\circ$ and $m\angle 2 = 2m\angle 1$.

Prove: $\angle 1$ and $\angle 2$ are complementary.

Proof:

Statements	Reasons
1. $m\angle 1 = 30^\circ$, $m\angle 2 = 2m\angle 1$	1. Given
2. <u> ?</u>	2. <u> ?</u>
3. <u> ?</u>	3. <u> ?</u>
4. <u> ?</u>	4. <u> ?</u>
5. <u> ?</u>	5. Simplify.
6. $\angle 1$ and $\angle 2$ are complementary.	6. Def. of comp. \sphericalangle

11. Each of the items listed below belongs in one of the blanks in the Statements column. Which belongs in Step 4?

- A $m\angle 2 = 2(30^\circ)$
- B $m\angle 1 + m\angle 2 = 90^\circ$
- C $m\angle 1 + m\angle 2 = 30^\circ + 60^\circ$
- D $m\angle 2 = 60^\circ$

12. Which is the justification for Step 2?

- F Add. Prop. of =
- G Simplify.
- H Subst.
- J \angle Add. Post.

Use the partially completed two-column and flowchart proofs for Exercises 13 and 14.

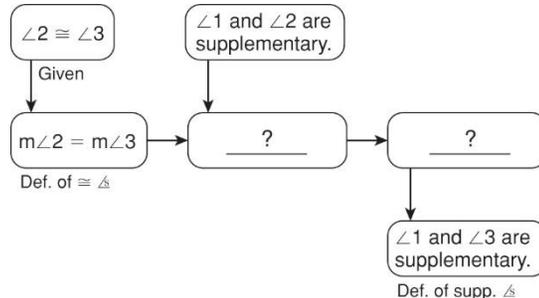
Given: $\angle 2 \cong \angle 3$, and $\angle 1$ and $\angle 2$ are adjacent angles whose noncommon sides form a straight line.

Prove: $\angle 1$ and $\angle 3$ are supplementary.

Two-Column Proof:

Statements	Reasons
1. $\angle 2 \cong \angle 3$	1. Given
2. $m\angle 2 = m\angle 3$	2. Def. of $\cong \sphericalangle$
3. $\angle 1$ and $\angle 2$ are supplementary.	3. <u> ?</u>
4. $m\angle 1 + m\angle 2 = 180^\circ$	4. Def. of supp. \sphericalangle
5. $m\angle 1 + m\angle 3 = 180^\circ$	5. <u> ?</u>
6. $\angle 1$ and $\angle 3$ are supplementary.	6. Def. of supp. \sphericalangle

Flowchart Proof:



13. In the flowchart proof, which belongs in the last blank box?

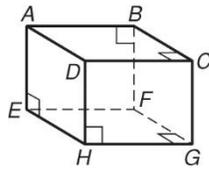
- A $m\angle 1 + m\angle 2 = 180^\circ$
- B Def. of supp. \sphericalangle
- C $m\angle 1 + m\angle 3 = 180^\circ$
- D Subst.

14. In the flowchart proof, which theorem justifies the statement " $\angle 1$ and $\angle 2$ are supplementary"?

- F Linear Pair Theorem
- G Congruent Supplements Theorem
- H Right Angle Congruence Theorem
- J Congruent Complements Theorem

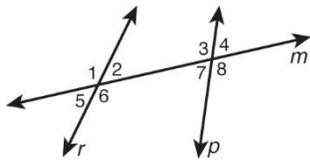
Chapter 3

Use the figure for Exercises 1 and 2.



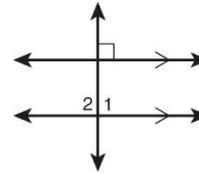
- Classify \overline{EH} and \overline{DH} .
 A skew segments
 B parallel segments
 C perpendicular segments
 D parallel planes
- How many segments are skew to \overline{AE} ?
 F 1 H 3
 G 2 J 4

Use the figure for Exercises 3 and 4.



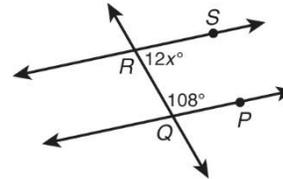
- Which are alternate exterior angles?
 A $\angle 1$ and $\angle 3$ C $\angle 3$ and $\angle 6$
 B $\angle 1$ and $\angle 8$ D $\angle 6$ and $\angle 7$
- Which statement is true?
 F $\angle 1$ and $\angle 2$ are alternate interior angles.
 G $\angle 1$ and $\angle 3$ are corresponding angles.
 H $\angle 3$ and $\angle 6$ are alternate exterior angles.
 J $\angle 3$ and $\angle 7$ are same-side interior angles.
- Which correctly completes the sentence?
 If two parallel lines are cut by a transversal, then the two pairs of same-side interior angles are _____.
 A supplementary
 B complementary
 C corresponding
 D congruent

- What type of angle is $\angle 1$?



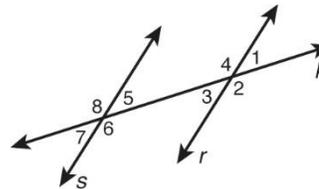
- F acute H obtuse
 G right J straight

- Given $\overline{RS} \parallel \overline{QP}$, what is the value of x ?



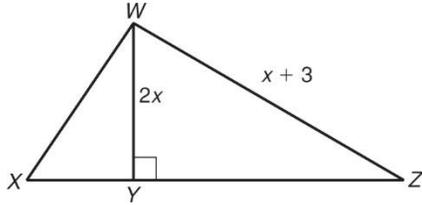
- A 6 C 72
 B 9 D 108

Use the figure for Exercises 8 and 9.



- Which information proves that $r \parallel s$?
 F $\angle 1 \cong \angle 3$ H $\angle 4 \cong \angle 6$
 G $\angle 4 \cong \angle 5$ J $\angle 5 \cong \angle 6$
- If $m\angle 3 = (4x + 20)^\circ$ and $m\angle 5 = (6x + 10)^\circ$, what value of x proves that $r \parallel s$?
 A 5 C 40
 B 15 D 100
- If a transversal is perpendicular to one of two parallel lines, how many different angle measures are formed?
 F 1 H 4
 G 3 J 8

11. Which is a possible value of x ?

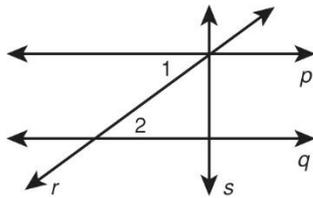


- A -2 C 3
 B 1 D 4

12. Given: $\overline{AB} \parallel \overline{CD}$. E is on \overline{AB} , and F is on \overline{CD} . \overline{EF} is the perpendicular bisector of \overline{CD} . What is the shortest segment from E to \overline{CD} ?

- F \overline{AF} H \overline{EF}
 G \overline{EC} J \overline{EC}

13. Which justifies Step 3?



Given: $s \perp q$ and $\angle 1 \cong \angle 2$.

Prove: $s \perp p$

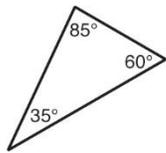
Proof:

Statements	Reasons
1. $\angle 1 \cong \angle 2, s \perp q$	1. Given
2. $p \parallel q$	2. <u> ? </u>
3. $s \perp p$	3. <u> ? </u>

- A \perp Transv. Thm.
 B $p \parallel r$
 C Conv. of Alt. Int. \perp Thm.
 D 2 lines \perp to same line \rightarrow 2 lines \parallel

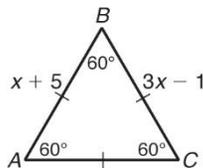
Chapter 4

1. Classify the triangle.



- A isosceles acute
- B isosceles obtuse
- C scalene acute
- D scalene obtuse

Use the figure for Exercises 2 and 3.



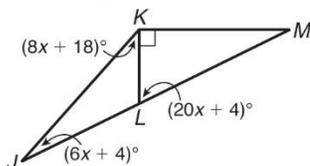
2. Which is NOT a correct classification for the triangle?

- F acute
- H isosceles
- G equiangular
- J scalene

3. What is the length of side \overline{BC} ?

- A 3
- C 10
- B 8
- D 24

Use the figure for Exercises 4 and 5.



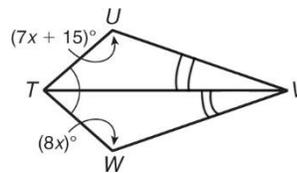
4. What is $m\angle KLM$?

- F 3
- H 42
- G 22
- J 64

5. What is $m\angle M$?

- A 0.2
- C 26
- B 4
- D 64

6. What is the $m\angle U$?



- F 5
- H 40
- G 15
- J 120

7. Two congruent triangles have the following corresponding parts:

$$\overline{RS} \cong \overline{UV}, \overline{RT} \cong \overline{UW}, \text{ and } \angle R \cong \angle U.$$

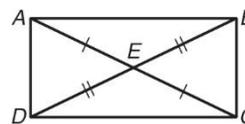
Which is NOT necessarily a correct congruence statement?

- A $\triangle RST \cong \triangle UVW$
- B $\triangle STR \cong \triangle VWU$
- C $\triangle TRS \cong \triangle VWU$
- D $\triangle TRS \cong \triangle WUV$

8. $\triangle KLM \cong \triangle RST$. $m\angle L = (3x + 15)^\circ$ and $m\angle S = (6x + 3)^\circ$. What is the value of x ?

- F 2
- H 6
- G 4
- J 27

Use the figure for Exercises 9–12.



9. If $AD = 5y + 7$ and $BC = 7y - 3$, what must the value of y be to prove $\triangle AED \cong \triangle CEB$ by the SSS Postulate?

- A 2
- C 17
- B 5
- D 32

10. What postulate or theorem justifies the congruence statement $\triangle ABE \cong \triangle CDE$?

- F SSS
- H ASA
- G SAS
- J AAS

11. If $\angle B$ and $\angle C$ are right angles, what additional congruence statement would allow you to prove $\triangle DCB \cong \triangle ABC$ by the ASA postulate?

- A $\angle DBC \cong \angle ACB$
- B $\angle BDC \cong \angle CAB$
- C $\overline{AB} \cong \overline{DC}$
- D $\overline{AC} \cong \overline{DB}$

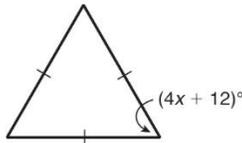
12. If $\angle A$ and $\angle C$ are right angles and $\overline{AD} \cong \overline{BC}$, what postulate or theorem justifies the congruence statement $\triangle BCD \cong \triangle DAB$?

- F SAS H AAS
- G ASA J HL

13. removed

14. removed

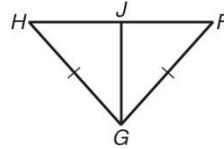
15. What is the value of x ?



- A 12 C 18
- B 19.5 D 60

Use the partially completed two-column proof for Exercises 16–18.

Given: \overline{GJ} bisects $\angle FGH$, $\overline{FG} \cong \overline{HG}$



Prove: $\overline{FJ} \cong \overline{HJ}$

Proof:

Statements	Reasons
1. \overline{GJ} bisects $\angle FGH$.	1. Given
2. $\angle FGJ \cong \angle HGJ$	2. Def. of \angle bisector
3. $\overline{FG} \cong \overline{HG}$	3. Given
4. $\angle F \cong \angle H$	4. _____ ? _____
5. $\triangle FGJ \cong \triangle HGJ$	5. _____ ? _____
6. $\overline{FJ} \cong \overline{HJ}$	6. _____ ? _____

16. Which reason belongs in Step 4?

- F Isosc. \triangle Thm.
- G Conv. of Isosc. \triangle Thm.
- H ASA
- J Def. of \angle bisector

17. Which reason belongs in Step 5?

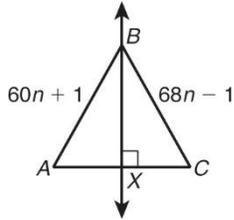
- A Isosc. \triangle Thm. C CPCTC
- B ASA D HL

18. Which reason belongs in Step 6?

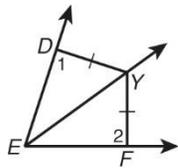
- F Isosc. \triangle Thm.
- G ASA
- H CPCTC
- J Def. of \angle bisector

Chapter 5

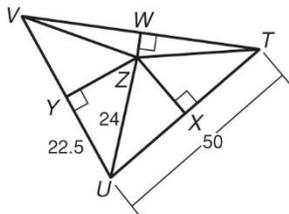
1. \overline{BX} is the perpendicular bisector of \overline{AC} .
What is the value of n ?



- A 0 C 4
B $\frac{1}{4}$ D Not here
2. Which point is on the perpendicular bisector of the segment with endpoints $(-2, 5)$ and $(-2, -3)$?
- F $(-2, 8)$ H $(-2, 1)$
G $(-2, 4)$ J $(1, -2)$
3. What information is sufficient to allow you to conclude that Y is on the bisector of $\angle E$?

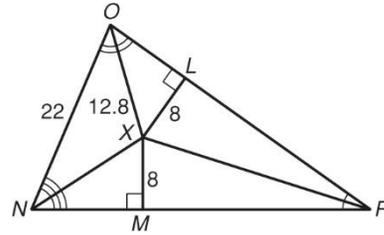


- A $m\angle 1 = 90^\circ$
B $m\angle 2 = 90^\circ$
C $m\angle 1 = 90^\circ$ and $m\angle 2 = 90^\circ$
D $m\angle FYE + m\angle DYE = 90^\circ$
4. Point Z is the circumcenter of $\triangle TUV$.
What is the value of UV ?



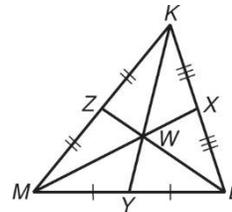
- F 33.75 H 50
G 45 J Not here

5. What is the distance from X to \overline{ON} ?



- A 8 C 11
B 12.8 D 12

6. If $WX = 3.6$, $WL = 6.1$, and $KW = 8$, what is the value of ZW ?

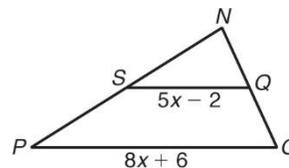


- F 3.05 H 4
G 3.6 J 4.06

7. Which is the orthocenter of a triangle with vertices $(-2, 1)$, $(3, 4)$, and $(3, -4)$?

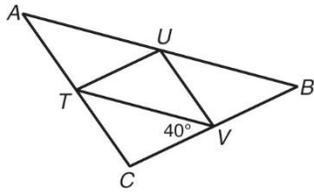
- A $(0, 1)$ C $(6, 1)$
B $(1, 0)$ D $(8, 1)$

8. \overline{SQ} is a midsegment of $\triangle NOP$. What is the length of \overline{OP} ?



- F 5 H 23
G 14 J 46

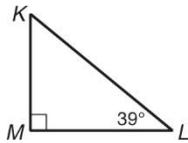
9. $\triangle TUV$ is the midsegment triangle of $\triangle ABC$. Which angle does NOT necessarily measure 40° ?



- A $\angle VTU$ C $\angle CTU$
 B $\angle TUA$ D $\angle VBU$

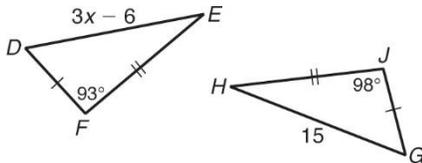
10. removed
 11. The lengths of two sides of a triangle are 7 and 11. Which could NOT be the length of the third side?
 A 5 C 12
 B 10 D 19

12. Which statement is false?



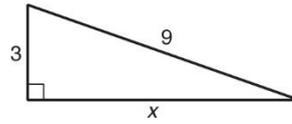
- F $\triangle KLM$ is scalene.
 G $ML + KM > KL$
 H $m\angle L < m\angle K$
 J $KM > ML$

13. Which best describes the range of values for x ?



- A $0 < x < 7$ C $x < 15$
 B $0 < x < 15$ D $6 < x < 7$

14. What is the value of x in simplest radical form?



- F $3\sqrt{12}$ H $\sqrt{72}$
 G $6\sqrt{2}$ J $\sqrt{89}$

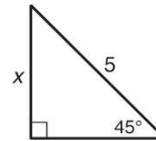
15. Which numbers form a Pythagorean triple?

- A 3, 4, 6 C 9, 12, 15
 B 7, $6\sqrt{2}$, 11 D 8, 15, 18

16. Which side length will form an obtuse triangle with sides of length 8 and 10?

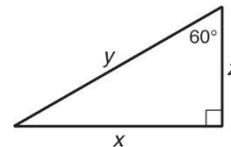
- F 6 H 12
 G 9 J 13

17. What is the value of x in simplest radical form?



- A 2.5 C $\frac{5\sqrt{2}}{2}$
 B $\frac{5}{\sqrt{2}}$ D $5\sqrt{2}$

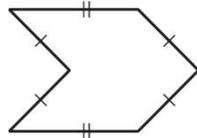
18. Which is a correct set of values?



- F $x = 27$, $y = 9\sqrt{3}$, $z = 18\sqrt{3}$
 G $x = 27$, $y = 18\sqrt{3}$, $z = 9\sqrt{3}$
 H $x = 9\sqrt{3}$, $y = 27$, $z = 18\sqrt{3}$
 J $x = 18\sqrt{3}$, $y = 9\sqrt{3}$, $z = 27$

Chapter 6

1. Which term does NOT describe the figure?

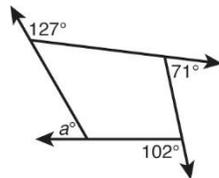


- A concave C polygon
B hexagon D regular

2. What is the sum of the measures of the interior angles of a 5-sided convex polygon?

- A 72 C 540
B 360 D 900

3. What is the value of a ?

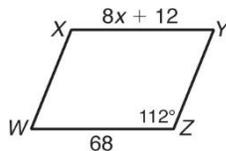


- A 60
B 80

4. The diagonals of $\square ABCD$ intersect at X . Which is NOT true?

- A $\angle DAB \cong \angle BCD$
B $m\angle DAB + m\angle CBA = 180^\circ$
C $\overline{BC} \cong \overline{AD}$
D $\overline{AX} \cong \overline{XB}$

Use the figure for Exercises 5 and 6.



5. $WXYZ$ is a parallelogram. Which is $m\angle W$?

- A 68°
B 112°

6. $WXYZ$ is a parallelogram. What is the value of x ?

- A 7
B 10

7. Which MUST be a parallelogram?

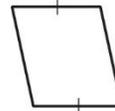


Figure 1

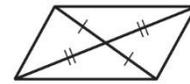
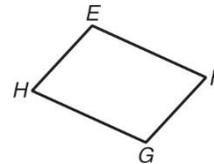


Figure 2

- A Figure 1
B Figure 2

8. If $\overline{EF} \parallel \overline{GH}$, what additional information would allow you to conclude that $EFGH$ is a parallelogram?

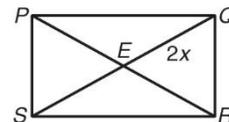


- A $\overline{EF} \cong \overline{GH}$
B $\overline{FG} \cong \overline{EH}$

9. Which is NOT always true?

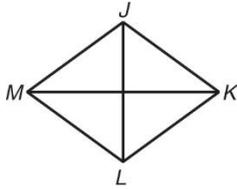
- A A square is a rhombus.
B A rectangle is a parallelogram.
C A rhombus is a rectangle.
D A square is a rectangle.

10. $PQRS$ is a rectangle. $PR = 26$. What is the value of x ?



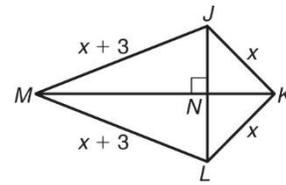
- A 6.5
B 13

11. $JKLM$ is a rhombus. If $m\angle JML = 70^\circ$, what is the value of $m\angle JKM$?

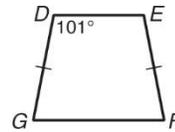


- A 35°
 B 55°
 C 70°
 D 110°
12. removed
 13. removed

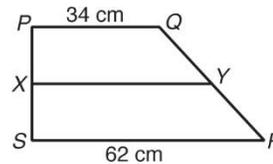
14. Which best describes the figure?



- A kite
 B parallelogram
 C quadrilateral
 D trapezoid
15. What is $m\angle F$ in the isosceles trapezoid?



- A 79°
 B 101°
16. In trapezoid $PQRS$, what is the length of midsegment \overline{XY} ?



- A 48 cm
 B 51 cm