Name: **KEY**

Circle the best answer.

___C___ 1. Which item can be given as a statement in a proof?

A Given

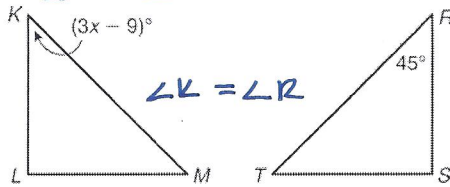B Def. of comp. ∠s   ⟩ Reasons

C m∠1 + m∠2 = 180°

___G___ 2. Given the partially completed two-column proof, which is the reason for Step 3?

Statements	Reasons
1. $\overline{AE} \cong \overline{FB}$	1. Given
2. $\overline{FB} \cong \overline{EF}$	2. Given
3. $\overline{AE} \cong \overline{EF}$	3. ___?___

Both equal FB, so they can equal each other.

F Def. of midpoint

G Trans. Prop. of ≅

___A___ 3. If △KLM ≅ △RST, find the value of x.

∠K = ∠R

A 18   3x − 9 = 45

B 45   3x = 54

X = 18

___G___ 4. Given: ∠A ≅ ∠D, ∠B ≅ ∠E, ∠C ≅ ∠F, $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, and $\overline{CA} \cong \overline{FD}$. Which is a correct congruence statement?

F △BCA ≅ △DEF   *all parts need to match up.

G △ABC ≅ △DEF

ABC ≅ DEF

Use the figure for Exercises 5 and 6.
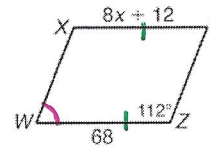
∠w + ∠z = 180
∠w + 112 = 180
∠w = 68°

5. WXYZ is a parallelogram. Which is m∠W?   ___A___

A 68°

B 112°

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

xy = wz

F 7   8x + 12 = 68

G 10   8x = 56

X = 7

7. Which similarity postulate or theorem lets you conclude that △JKL ~ △MNO?   ___A___
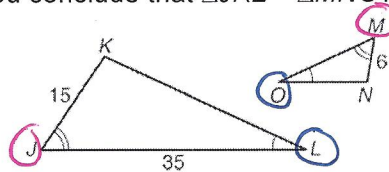
A AA

B SSS

8. What is the length of $\overline{AC}$?   ___G___

similar △s
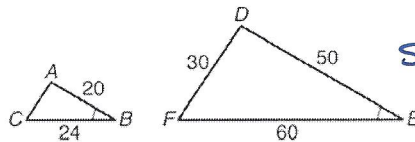
F 10

G 12

H 15

$\dfrac{AC}{DF} = \dfrac{AB}{DE}$

$\dfrac{x}{30} = \dfrac{20}{50}$

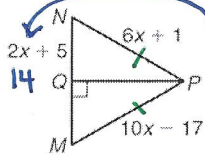50x = 600

x = 12 = AB

OR scale factor = $\dfrac{new}{old}$

= $\dfrac{50}{20}$ = 2.5

so, $\dfrac{DF}{2.5} = \dfrac{30}{2.5}$ = 12

Choose the best answer.

C 1. $\overline{PQ}$ is the perpendicular bisector of $\overline{MN}$.
What is QN?
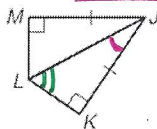
$6x+1 = 10x-17$
$18 = 4x$
$4.5 = x$

A 7   C 14

B 10.5

H 2. If m$\angle LJK = 28°$, what is m$\angle MLK$?

$\angle L + 90 + 28 = 180$
$\angle L = 62°$
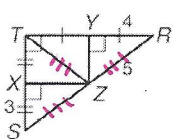$\angle MLK = 62(2)$
$= 124$

F 56°   H 124°

G 62°

A 3. A segment has endpoints $S(-4, -3)$ and $T(2, -9)$. Which equation represents the perpendicular bisector of the segment?

A $y + 6 = 1(x + 1)$

B $y + 9 = 1(x - 2)$

C $y + 3 = 1(x + 4)$

H 4. Point Z is the circumcenter of $\triangle RST$. What is TZ?
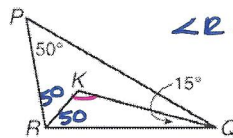
F 3   H 5

G 4

$S(-4, -3)\ T(2, -9)$

Midpoint $\left(-1, -6\right)$
   x_1 y_1

ST slope $= \dfrac{-9-(-3)}{2-(-4)} = \dfrac{-6}{6} = -1$

perpendicular slope $= 1$

$y - (-6) = 1(x - (-1))$

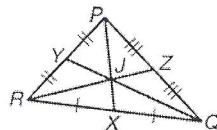5. Point K is the incenter of $\triangle PQR$. What is m$\angle RKQ$?   **B**

$\angle R + 50 + 30 = 180$
$\angle R = 100$

$\angle RKQ = 180 - 50 - 15$
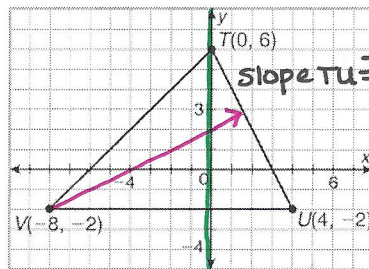$\angle RKQ = 115$

A 100   C 125

B 115

6. Which must be true?   **H**

F m$\angle PQY = $ m$\angle RQY$

G m$\angle PRZ = $ m$\angle RPX$

H $QJ = 2 \cdot JY$

7. Where do the altitudes of $\triangle TUV$ meet?   **A**
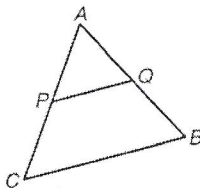
slope TU $= \dfrac{8}{4} = -2$
perpendicular slope $= 1/2$

$y + 2 = 1/2(x + 8)$
$y + 2 = 1/2(0 + 8)$
$y + 2 = 1/2(8)$
$y + 2 = 4$
$y = 2$

A (0, 2)   C (0, 1)

B (0, 1.5)

$x = 0$

8. $\overline{PQ}$ is a midsegment of $\triangle ABC$. Which statement is impossible?   **G**

✓F $AP = PC$ ✓H $\overline{PQ} \parallel \overline{BC}$

✗G $PQ = BC$

$PQ = 1/2 BC$

Handwritten: $x+30 +4x = 180 \rightarrow 5x = 150$
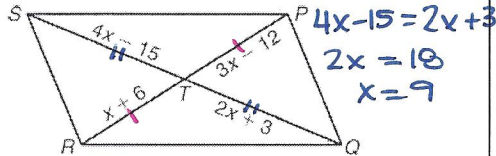$x = 30$

Choose the best answer.

C 1. The consecutive angles of a parallelogram measure $(x + 30)°$ and $4x°$. What is the measure of the smallest angle?

    A 10°   C 60°
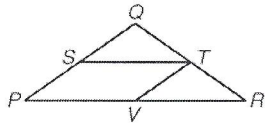
    B 30°

H 2. PQRS is a parallelogram. Find x.

Handwritten: $4x-15 = 2x +3$
$2x = 18$
$x = 9$

    F 3   H 9

    G 7

Handwritten: $x+6 = 3x - 12$
$18 = 2x \rightarrow 9 = x$

A 3. PSTV is a parallelogram, and V is the midpoint of $\overline{PR}$.
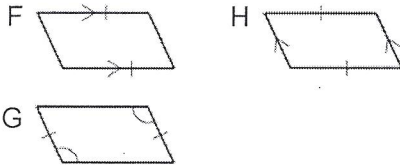

    Which is NOT necessarily true?

    A $TR = TV$ ✓C $\overline{QP} \parallel \overline{TV}$
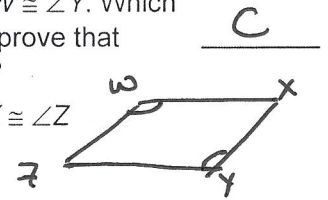
    ✓B $QS = SP$

F 4. Which quadrilateral MUST be a parallelogram?
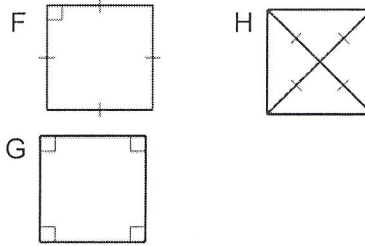

    F   H

    G

5. In quadrilateral WXYZ, $\angle W \cong \angle Y$. Which information would help to prove that WXYZ is a parallelogram? **C**

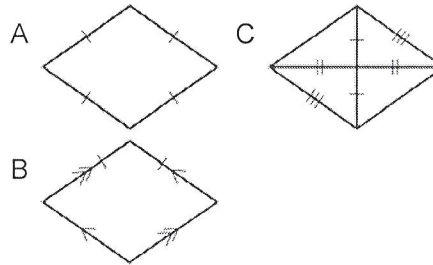   A $WY = XZ$ C $\angle X \cong \angle Z$

    ✗B $\angle X \cong \angle W$

6. Which MUST be a square? **F**

    F   H

    G

7. Which is NOT necessarily a rhombus? **C**

    A   C

    B

8. Quadrilateral RSTU is a parallelogram. What other information would allow you to prove that RSTU is a rectangle? **H**

    F Opposite angles are congruent.

    G Opposite sides are congruent.

    H The diagonals are congruent.

9. Three sides of a kite measure 8 inches, 10 inches, and 8 inches. What is the perimeter of the kite? *add up all the sides.* **C**

    A 26 in.   C 36 in.

    B 28 in.