Sample: Geometry - Scholl Geometry Exam

Geometry Midterm Exam

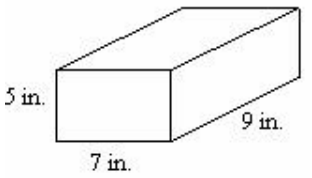
Score: _____ / _____

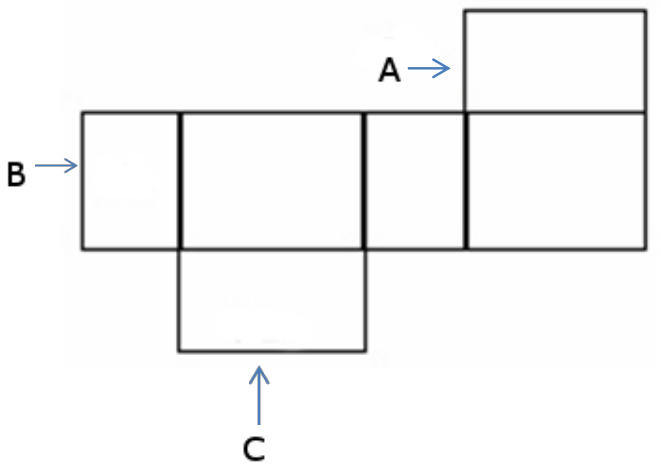
Name: _____

Student Number: _____

Directions: *Answer each question in the space below the question. Show your work when applicable.*

1 Label the net for the figure below with its dimensions.





Answer:

- $5\ in.$
- $7\ in.$
- $9\ in.$

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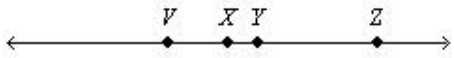
2 Name four rays shown.



Answer:

- VZ – a "rightward" ray originating from point V;
- YZ – a "rightward" ray originating from point Y;
- YV – a "leftward" ray originating from point Y;
- ZV – a "leftward" ray originating from point Z.

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3 You live in Carson City, Nevada, which has approximate (latitude, longitude) coordinates of (39N, 120W). Your friend lives in Ottawa, Ohio, with coordinates of (41N, 84W). You plan to meet halfway between the two cities. Find the coordinates of the halfway point.

Solution: We can introduce a coordinate system with the latitude being the first coordinate and longitude the second.
Then the coordinates of the halfway point will be equal to the average value of the corresponding "original" coordinates:

- $\frac{39+41}{2} = \frac{80}{2} = 40$;
- $\frac{120+84}{2} = \frac{204}{2} = 102$.

Answer. The coordinates of the halfway point are $(40N,\ 102W)$.

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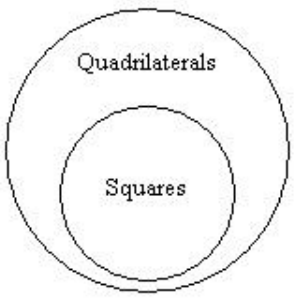
4 Write the conditional statement that the Venn diagram illustrates.



Answer: All squares are quadrilateral (or, each square is a quadrilateral).

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5 Is the following conditional true or false? If it is true, explain why. If it is false, give a counterexample.

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If it is snowing in Dallas, Texas, then it is snowing in the United States.

Answer: The statement is false. A counterexample may be "It is snowing in Dallas, Texas, but it is not snowing in Miami, Florida".

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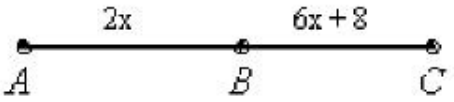
6 What is the value of *x*? Justify each step.

$AC = 32$



Drawing not to scale

AB + BC = AC — a. We are given the length of AC. If we express it as a function of x, we will have an equation for finding x.

2x + 6x + 8 = 32 — b. Replace AB and AC with their given lengths $2x$ and $6x + 8$, correspondingly.

8x + 8 = 32 — c. $2x + 6x = (2 + 6)x = 8x$.

8x = 24 — d. Bring the 8 to the right-hand side of the equality: $32 - 8 = 24$.

X = 3 — e. Finally, $x = \frac{24}{8} = 3$.

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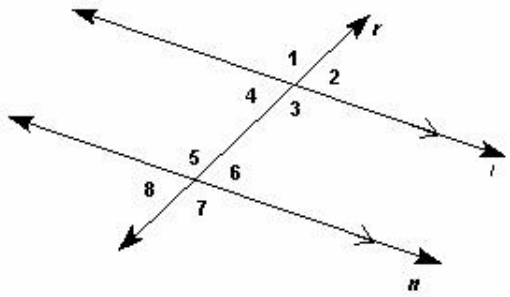
7 Give the missing reasons in this proof of the Alternate Interior Angles Theorem.

Given: $l \parallel n$

Prove: $\angle 4 \cong \angle 6$



Statements	Reasons
1. $l \parallel n$	1. Given
2. $\angle 2 \cong \angle 6$	a. ?
3. $\angle 4 \cong \angle 2$	b. ?
4. $\angle 6 \cong \angle 4$	c. ?

a. Corresponding Angles Postulate

b. Vertical Angles Postulate

c. Alternate Interior Angles Postulate

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8 Based on the given information, can you conclude that $\Delta QRS \cong \Delta TUV$? Explain.

Given: $\overline{\boldsymbol{QR}} \cong \overline{\boldsymbol{TU}}, \overline{\boldsymbol{QS}} \cong \overline{\boldsymbol{TV}}, \angle R \cong \angle U$ and $\Delta QRS \cong \Delta TUV$

Answer: Yes, we can conclude that $\Delta QRS \cong \Delta TUV$, since this is a given statement.

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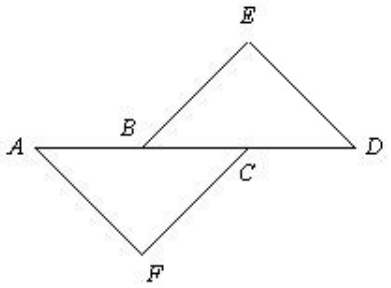
9 Write the missing reasons to complete the proof.
Given: $\overline{AB} \cong \overline{CD}$, $\angle A \cong \angle D$, and $\overline{AF} \cong \overline{DE}$
Prove: $\Delta FAC \cong \Delta EDB$



Statement	Reason
1. $\overline{AF} \cong \overline{DE}$	1. Given
2. $\angle A \cong \angle D$	2. Given
3. $\overline{AB} \cong \overline{CD}$	3. Given
4. $AB = CD$	4. Definition of congruent segments
5. $AB + BC = CD + BC$	5. ?
6. $AC = BD$	6. Segment Addition Postulate
7. $\overline{AC} \cong \overline{BD}$	7. Definition of congruent segments
8. $\Delta FAC \cong \Delta EDB$	8. ?

Step 5: Add BC to both sides of the above equality.

Step 8: Side-Angle-Side condition of triangle congruence: If two pairs of sides of two triangles are equal in length, and the included angles are equal in measurement, then the triangles are congruent. (See steps 1, 2, 7)