

Geometry
Semester Review C
Part 2

Name KEY

1.1 What is the perimeter of $\triangle ABC$ if $A(0, 4)$, $B(2, -2)$ and $C(-5, 7)$?

- A. 20 **B. 23.6** C. 14.5 D. 13.3 E. Not enough information

$$6.32 + 11.4 + 5.83 = 23.55$$

$$AB = \sqrt{2^2 + 6^2} = \sqrt{4 + 36} = \sqrt{40} = 6.32$$

$$BC = \sqrt{7^2 + 9^2} = \sqrt{49 + 81} = \sqrt{130} = 11.4$$

$$AC = \sqrt{5^2 + 3^2} = \sqrt{25 + 9} = \sqrt{34} = 5.83$$

2.2 $\angle B$ and $\angle V$ are supplementary. The measure of $\angle V$ is four times the measure of $\angle B$. Find $m\angle V$.

- A. 18° B. 45° C. 72° **D. 144°** E. 135°

$$m\angle V = 4(36) = 144$$

$$m\angle B + m\angle V = 180$$

$$x + 4x = 180$$

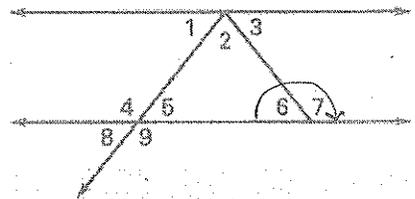
$$5x = 180$$

$$x = 36$$

3.1 $\angle 6$ and $\angle 7$ in the diagram at the right are _____?

- A. vertical angles B. complementary

- C. a linear pair** **D. supplementary**



4.1 Given points $K(7, -2)$ and $J(-5, 6)$ find the coordinates of the midpoint of \overline{KJ}

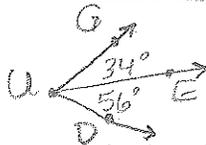
- A. $(-1, -2)$ **B. $(1, 2)$** C. $(5/2, 1/2)$ D. $(2, 4)$ E. $(6, -4)$

$$\frac{7 + (-5)}{2}, \frac{-2 + 6}{2}$$

$$\left(\frac{2}{2}, \frac{4}{2}\right) = (1, 2)$$

5.1 Given $\angle GUD$ and \overline{UE} in the interior of $\angle GUD$ if $m\angle GUE = 34^\circ$ and $m\angle DUE = 56^\circ$, then the two angles are _____?

- A. supplementary **B. complementary** C. a linear pair D. supplementary and a linear pair



6.1 What is the converse of "Since it is U.S. holiday, then school is not in session?"

- A. If school is not in session, then it is a holiday.** B. If there is school, then it is not a U.S. holiday.
C. If it is not a U.S. holiday, then no school. D. There is no school because it's a U.S. holiday.

7.1 "If $XY + 7 = 17$, then $XY = 10$." is an example of the _____?

- A. Symmetric property of equality B. Substitution property of equality
C. Addition property of equality **D. Subtraction property of equality**
E. Reflexive property of equality

8.1 Two angles, $\angle 1$ and $\angle 2$, are each supplementary to $\angle 3$. If $m\angle 1 = 17^\circ$, what is $m\angle 2$?

- A. 17° B. 73° C. 163° D. 90° E. 180°

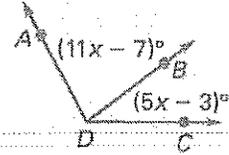
$$m\angle 1 + m\angle 3 = 180$$

$$m\angle 2 + m\angle 3 = 180$$

$$\therefore m\angle 1 = m\angle 2$$

9.2 If $m\angle CDA = 150^\circ$, find the $m\angle ADB$.

- A. 10° B. 47° C. 50° D. 103° E. 100°



$$11x - 7 + 5x - 3 = 150$$

$$16x - 10 = 150$$

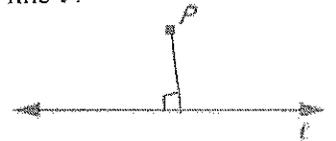
$$16x = 160$$

$$x = 10$$

$$m\angle ADB = 11(10) - 7 = 110 - 7 = 103^\circ$$

10.1 In the diagram, how many lines can be drawn through point P that are perpendicular to line ℓ ?

- A. 0 B. 1 C. 2 D. 3



In 11 – 14, match the name of the angle relationship with the given angle pair in the figure.

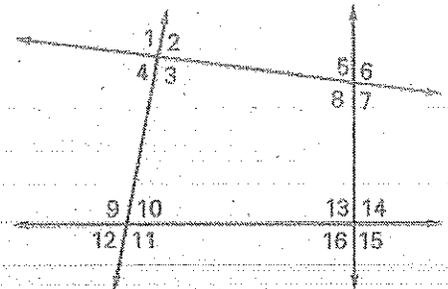
11.1 $\angle 1$ and $\angle 3$ E

12.1 $\angle 6$ and $\angle 14$ D

13.1 $\angle 4$ and $\angle 10$ A

14.1 $\angle 12$ and $\angle 14$ C

- A. alternate interior angles
 B. consecutive interior angles
 C. alternate exterior angles
 D. corresponding angles
 E. vertical angles



15.2 What is the value of x ?

- A. 18 B. 14 C. 27 D. 31 E. 116

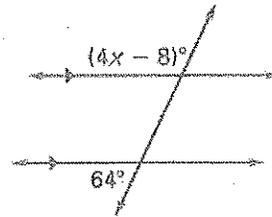
$$4x - 8 + 64 = 180$$

$$4x + 56 = 180$$

$$-56 \rightarrow$$

$$4x = 124$$

$$x = 31$$



16.2 If two sides of a triangle are 17 inches and 26 inches, find the possible lengths of the third side.

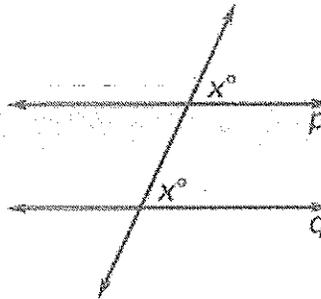
- A. between 17 inches and 26 inches B. between 9 inches and 26 inches
 C. between 17 inches and 43 inches D. between 9 inches and 43 inches

$$26 + 17 = 43$$

$$26 - 17 = 9$$

17.1 State the postulate or theorem you would use to prove that lines p and q are parallel.

- A. Alternate Interior Angles Converse
- B. Alternate Exterior Angles Converse
- C. Consecutive Interior Angles Converse
- D. Corresponding Angles Converse**
- E. Vertical Angles Congruence Theorem



18.1 Which of the following term(s) can be used to describe a triangle that has two congruent sides?

- A. acute
- B. equilateral
- C. isosceles**
- D. scalene
- E. right

19.1 Which of the following term(s) can be used to describe a triangle whose angle measures are 45° , 90° , and 45° ?

- A. acute
- B. obtuse
- C. isosceles**
- D. right**
- E. equiangular



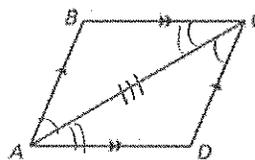
20.1 Given $\triangle KIT \cong \triangle DOG$ which angle in $\triangle DOG$ is congruent to $\angle IKT$?

- A. $\angle DOG$
- B. $\angle GDO$
- C. $\angle G$
- D. $\angle ODG$**
- E. $\angle GOD$



21.2 Why are the two triangles congruent in the diagram?

- A. SSS
- B. SAS
- C. HL
- D. ASA**
- E. AAS



// lines \rightarrow AIA

22.2 What is the value of x in the triangle?

- A. 9
- B. 18
- C. 10
- D. 5**
- E. Not enough information

Handwritten solution for question 22.2:

$$6y - 5 = 10y - 41$$

$$+41 \quad -6y$$

$$36 = 4y$$

$$y = 9$$

Substituting $y = 9$ into the angle expressions:

$$6(9) - 5 = 54 - 5 = 49^\circ$$

$$(6y - 5)^\circ = 49^\circ$$

$$(10y - 41)^\circ = 49^\circ$$

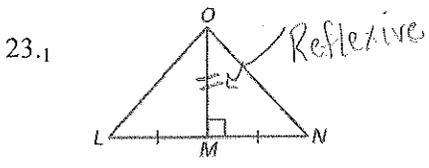
$$(12x + 22)^\circ = 82^\circ$$

$$180 - 49 - 49 = 82$$

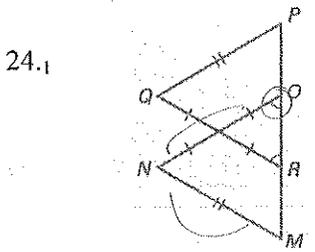
$$12x + 22 = 82$$

$$12x = 60 \rightarrow x = 5$$

In 23 and 24, match the letter to the triangle congruence pattern.

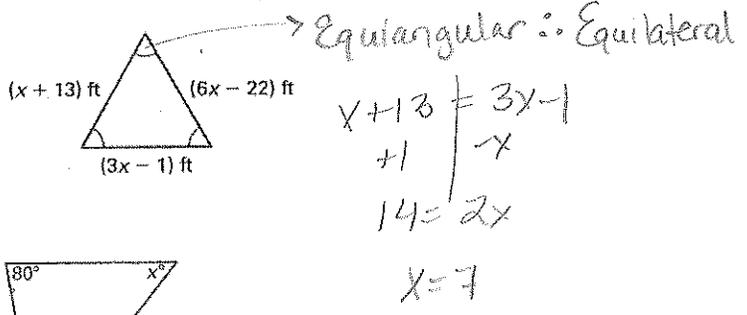


- A. SSS **B. SAS** C. HL
 D. ASA E. AAS F. Not enough information

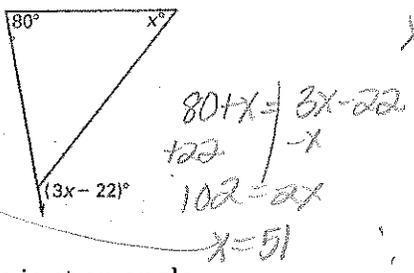


- A. SSS B. SAS C. HL
 D. ASA E. SSA **F. Not enough information**

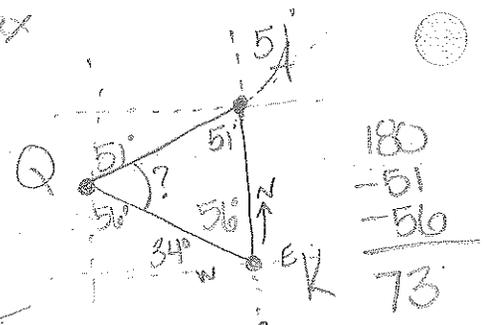
- 25.2 What is the value of x in the triangle?
 A. 6 **B. 7** C. 29 D. 32 E. 38



- 26.1 What is the measure of the exterior angle?
 A. 51° B. 100° **C. 131°** D. 141°



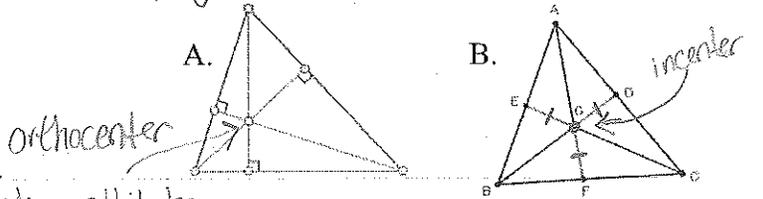
- 27.2 Ace City due North of Kingstown. Queensville is at an angle of 34° north of west of Kingstown. Ace City is at angle of 51° east of north from Queensville. What is measure of the angle from Ace City to Queensville to Kingstown?
 A. 56° B. 39° **C. 73°** D. 85° E. 95°



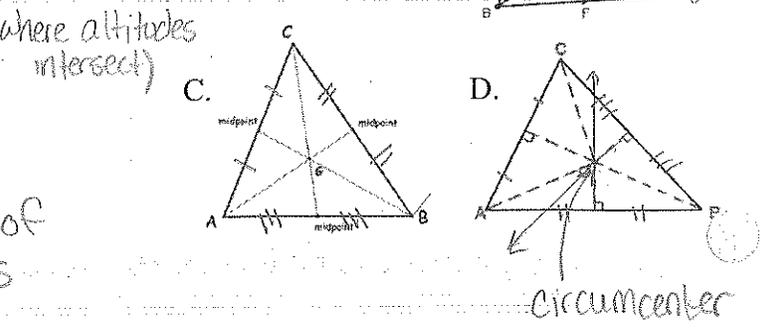
*choose best answer

In 28 - 30, choose the proper triangle with the given feature.

- 28.1 Perpendicular bisectors
 A. B. C. **D.**



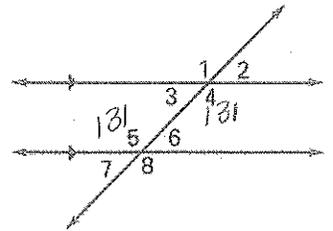
- 29.1 Angle bisectors → intersection called Incenter → equidistant to all sides
 A. **B.** C. D.



- 30.1 Centroid → intersection of medians
 A. B. **C.** D.

31.2 In the diagram to the right, if $m\angle 4 = 131^\circ$, find $m\angle 7$.

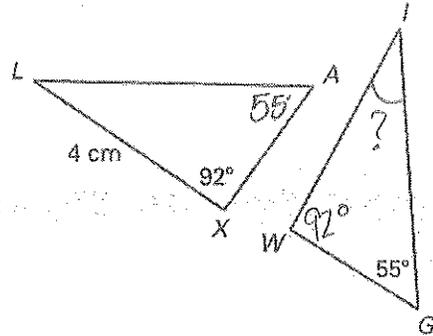
- A. 131° B. 41° C. 39° **D. 49°** E. 59°



$m\angle 7 = 180 - 131 = 49$

32.2 Find $m\angle GIW$ if $\angle G \cong \angle A$ and $\angle X \cong \angle W$.

- A. 33°** B. 43° C. 55° D. 92° E. 147°

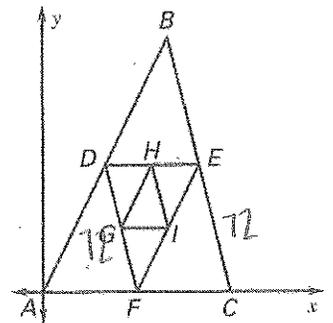


180
 $- 92$
 $- 55$

 33

33.2 $D, E, \text{ and } F$ are midpoints of $\triangle ABC$. $G, H, \text{ and } I$ are midpoints of $\triangle DEF$. Find HI if the length of \overline{EC} is 72 mm.

- A. 18 mm **B. 36 mm** C. 54 mm D. 72 mm E. 144 mm

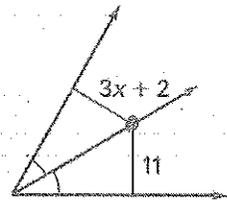


$HI = \frac{1}{2} DF = \frac{1}{2}(72) = 36$

Midsegments are // and half length

34.1 In the figure to the right, find the value of x .

- A. 3 B. $4\frac{1}{3}$ C. $25\frac{2}{3}$ D. $55\frac{2}{3}$ **E. Not enough information**



Cannot assume $3x+2=11$ because not marked \perp to the sides

35.1 Is it possible to draw a triangle with lengths 40 inches, 7 feet, and 4 yards?

- A. Yes **B. No** C. Not enough information

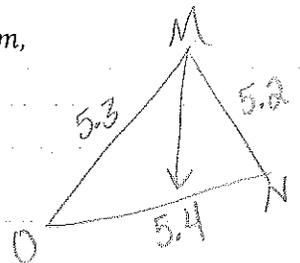
$7+4 = 11 < 40$

NO

Thm 5.12 \rightarrow sum has to be $>$ 3rd side

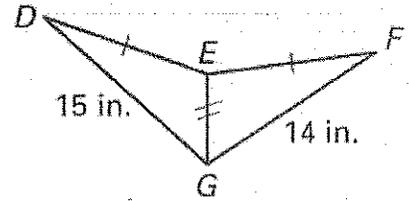
36.2 List the angles of $\triangle MNO$ in order from largest to smallest if $MN = 5.2 \text{ cm}$, $NO = 5.4 \text{ cm}$, and $MO = 5.3 \text{ cm}$.

- A. $\angle M, \angle N, \angle O$** B. $\angle O, \angle N, \angle M$ C. $\angle N, \angle M, \angle O$
D. $\angle O, \angle M, \angle N$ E. NO, MO, MN



37.1 $m\angle FEG$? $m\angle DEG$ and give the reason for your answer

- ~~A. $>$, Hinge Theorem~~ ~~B. $>$, Hinge Converse Theorem~~
~~C. $<$, Hinge Theorem~~ **D. $<$, Hinge Converse Theorem**
~~E. $=$, Hinge Theorem~~ ~~F. $=$, Hinge Converse Theorem~~



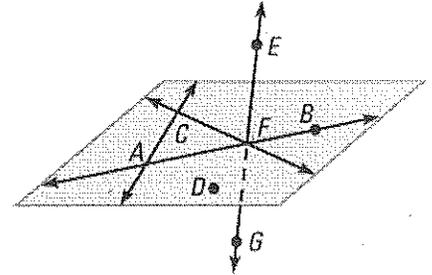
In 38-41, use the diagram to determine if the statement is (A) true or (B) false.

38.1 \overrightarrow{EF} and \overrightarrow{GF} are opposite rays.

- A. True **B. False**

39.1 \overrightarrow{AD} and \overrightarrow{CF} are parallel.

- A. True **B. False**



40.1 A name for the shaded plane is "plane D".

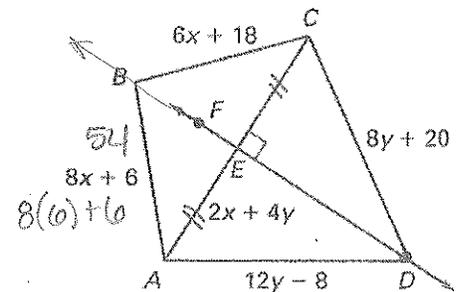
- A. True **B. False**

41.1 $\angle AFC$ and $\angle EFB$ form a linear pair.

- A. True **B. False**

42.2 In the diagram, E is the midpoint of \overline{CA} and B is on \overline{DF} . What is the length of \overline{AC} ?

- A. 6 B. 7 C. 40
D. 80 E. Not enough information



$$\begin{aligned}
 6x + 18 &= 8x + 6 \\
 -6 & \quad -6x \\
 12 &= 2x \\
 x &= 6
 \end{aligned}$$

$$\begin{aligned}
 8y + 20 &= 12y - 8 \\
 +8 & \quad -8y \\
 28 &= 4y \\
 y &= 7
 \end{aligned}$$

plug in \rightarrow

$$\begin{aligned}
 AE &= 2x + 4y \\
 &= 2(6) + 4(7) \\
 &= 12 + 28 \\
 AE &= 40
 \end{aligned}$$

$$\begin{aligned}
 AC &= 2(40) \\
 &= 80
 \end{aligned}$$