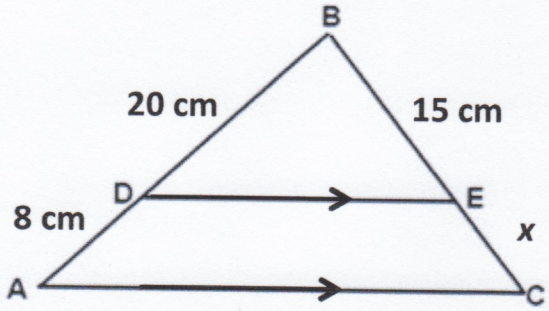
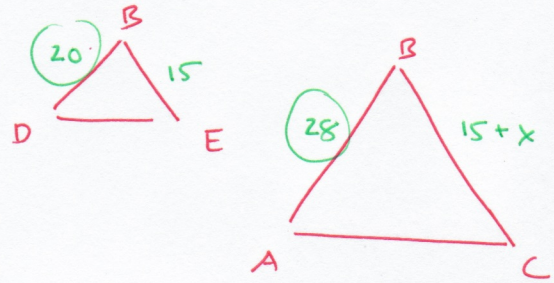
PART A – MULTIPLE CHOICE

1. Solve for *x*.





A) 21

B) 10

C) 8

D) 6

$$\frac{\cancel{20}\cdot 15\cdot 28}{\cancel{20}} = \frac{(15+x)\cdot\cancel{15}\cdot 20}{\cancel{15}}$$

$$420 = 300 + 20x$$
$$-300 \qquad -300$$

$$\frac{120}{20} = \frac{\cancel{20}x}{\cancel{20}}$$

$$\boxed{6 = x}$$

2. Which equation represents a line that is parallel to:

SAME SLOPE. 'a'.

$$2x + 3y + 18 = 0$$
$$-2x \qquad -18 \qquad -2x - 18$$

$$\frac{3y}{3} = \frac{-2x - 18}{3}$$

$$y = -0.\overline{6}x - 6$$

slope

A) $y = \frac{3}{2}x + 90$

B) $y = -\frac{3}{2}x + 9$

C) $y = \frac{2}{3}x + 19$

D) $y = -\frac{2}{3}x + 29$

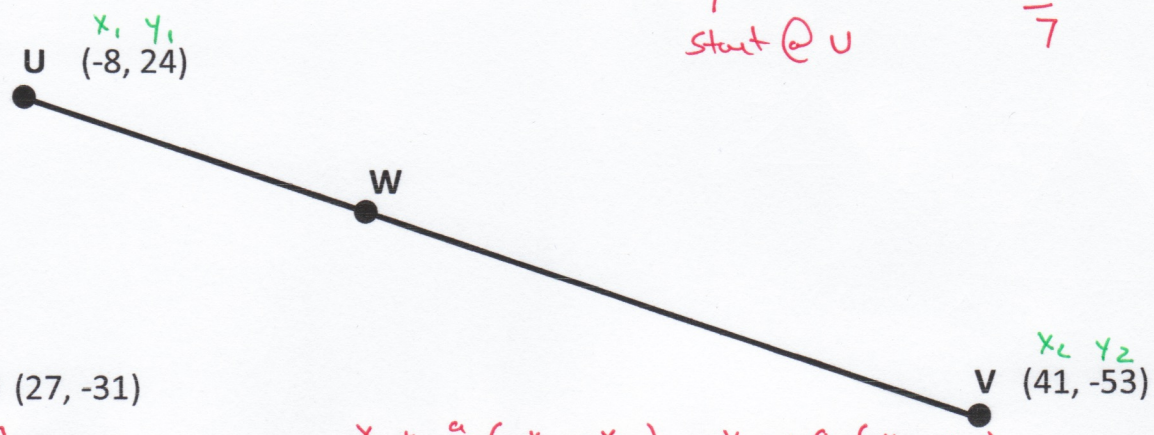
$-0.\overline{6}$

// same slope

3. Find the coordinates of point W, which divides $\overline{UV}$ in a ratio of 2:5

Start @ U

$\frac{2}{7}$



A) (27, -31)

B) (6, 2)

C) (22, 2)

D) (6, 46)

$x_1 + \frac{a}{b}(x_2 - x_1),\ y_1 + \frac{a}{b}(y_2 - y_1).$

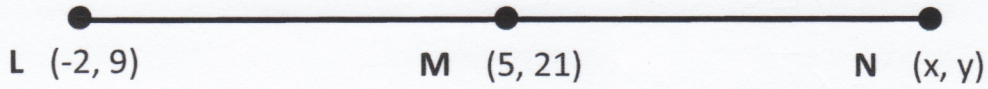
$-8 + \frac{2}{7}(41 - -8),\ 24 + \frac{2}{7}(-53 - 24)$

$-8 + \frac{2}{7}(49),\ 24 + \frac{2}{7}(-77)$

$-8 + 14,\ 24 - 22$

$(6, 2)$

4. Find (x, y) given that point M is the midpoint of $\overline{LN}$.



A) (2, -9)

B) (8, -3)

C) (12, 33)

D) (12, 28)

x_s: $-2 \xrightarrow{2} 0 \xrightarrow{5} 5$ 12

+7 +7

y_s 9 21 33

+12 +12

x, y

(12, 33)

5. Consider the following system of equations:

- $3x - 2y + 30 = 0$
- $5y = 15x + 30$

What is the solution to this system?

A) $(4.\overline{6}, -22)$

B) $(6, 24)$

C) $(2, 12)$

D) $(-4.\overline{6}, -8)$

$3x - 2y + 30 = 0$
$-3x \quad -30 \quad -3x - 30$
$\frac{-2y}{-2} = \frac{-3x - 30}{-2}$
$y = 1.5x + 15$

$\frac{5y}{5} = \frac{15x + 30}{5}$
$y = 3x + 6$

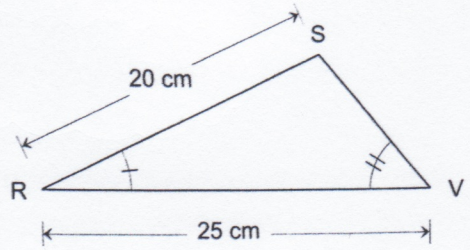
$1.5x + 15 = 3x + 6$
$-1.5x \quad -1.5x$
$15 = 1.5x + 6$
$-6 \quad -6$
$\frac{9}{1.5} = \frac{1.5x}{1.5}$
$6 = x$

$y = 1.5x + 15$
$y = 1.5(6) + 15$
$y = 9 + 15$
$y = 24$

6. Consider triangle RSV shown at right.

no 3rd side

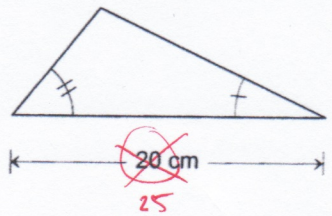
~~SSS~~
SAS
ASA.



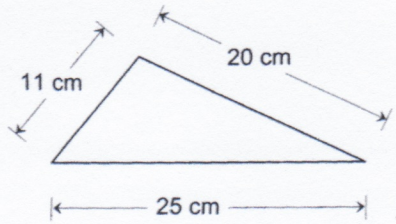
Which of the following triangles is necessarily congruent to triangle RSV?

A)

~~SSS~~
~~SAS~~
~~ASA~~



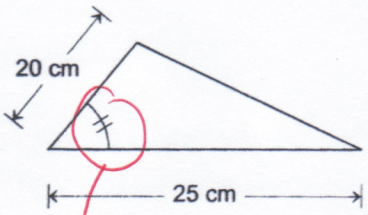
C)



~~SSS~~
~~SAS~~
~~ASA~~

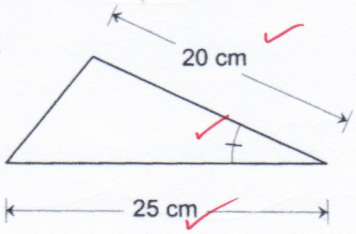
B)

~~SSS~~
~~SAS~~
~~ASA~~



wrong angle

D)



~~SSS~~
SAS
~~ASA~~

PART B – SHORT ANSWER

7. Find the **x-intercept** and **y-intercept** of the line represented by the following equation:

$$\frac{4y}{4} = \frac{10x + 84}{4}$$

$$y = 2.5x + 21$$

X-intercept $(y=0)$

$y = 2.5x + 21$

$0 = 2.5x + 21$

$-21 \qquad -21$

$\frac{-21}{2.5} = \frac{2.5x}{2.5}$

$-8.4 = x$

Y-intercept $(x=0)$

$y = 2.5x + 21$

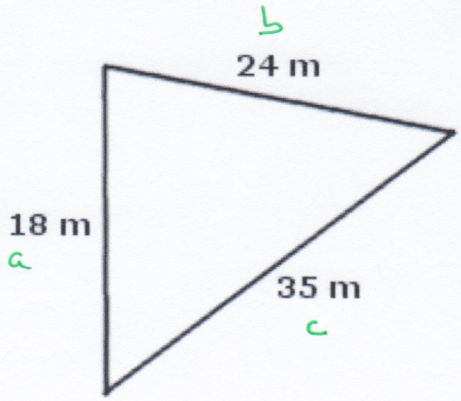
$y = 2.5(0) + 21$

$y = 21$

X-int $(-8.4, 0)$

Y-int. $(0, 21)$

8. What is the area of the triangle below?
Round your answer to the nearest tenth.



$s = \frac{a+b+c}{2}$

$s = \frac{18+24+35}{2} = \frac{77}{2} = 38.5$

$A_\Delta = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{38.5(38.5-18)(38.5-24)(38.5-35)}$

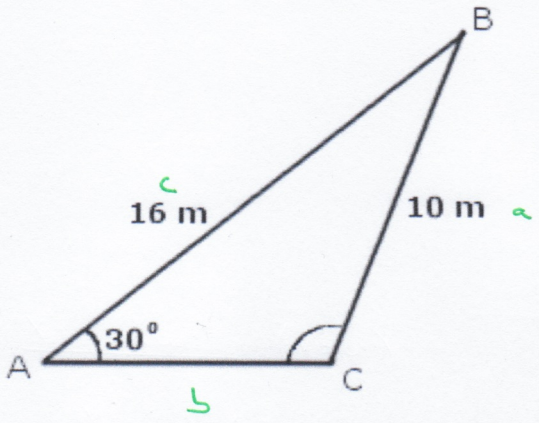
$= \sqrt{38.5(20.5)(14.5)(3.5)}$

$= \sqrt{40\,054.4375}$

$= 200.136$

$A_\Delta \approx 200.1$

9. What is the measure of obtuse angle C?
Round your answer to the nearest tenth.



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{10}{\sin 30} = \cancel{\frac{b}{\sin B}} = \frac{16}{\sin C}$$

$$\sin C = \frac{(16)(\sin 30)}{10}$$

$$\cancel{\sin^{-1}}\ \cancel{\sin} C = \sin^{-1} 0.8$$

$$C = 53.130°$$

Obtuse = 180 - acute

$$C = 180 - 53.130$$

$$C = 126.870°$$

$$C \approx 126.9°$$

Part A

	A	B	C	D
1.	☐	☐	☐	☑
2.	☐	☐	☐	☑
3.	☐	☑	☐	☐
4.	☐	☐	☑	☐
5.	☐	☑	☐	☐
6.	☐	☐	☐	☑

Part B

7. The x-intercept is (__-8.4__, __0__)

   The y-intercept is (__0__, __21__)

8. The area is __200.1__ m^2

9. Angle C measures __126.9°__ degrees