Angeles City Science High School

Mathematics 9

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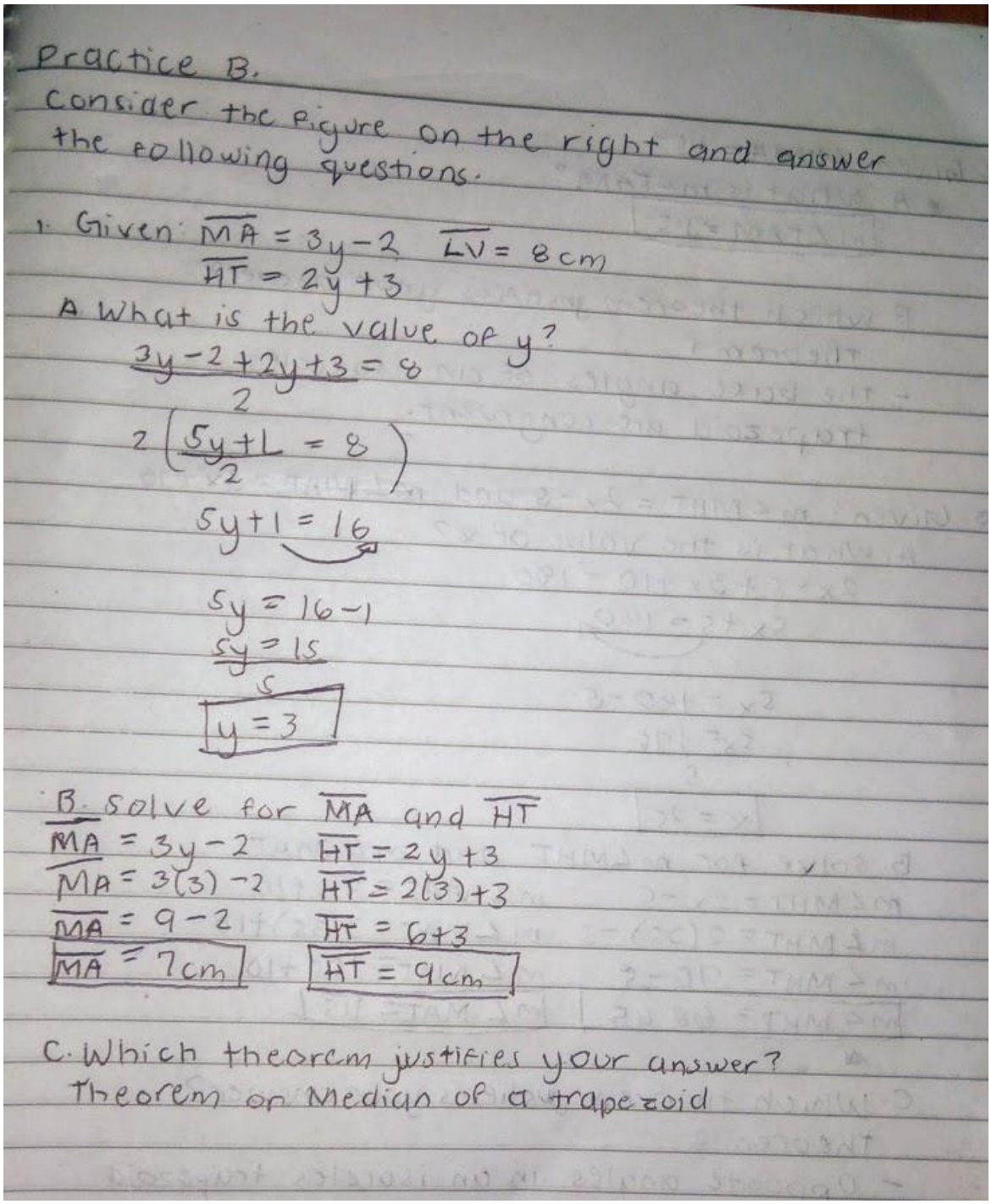

Practice B.

Consider the figure on the right and answer the following questions.

1. Given: $\overline{MA} = 3y - 2$ $\overline{LV} = 8\text{ cm}$
$\overline{HT} = 2y + 3$

A. What is the value of y?

$$\frac{3y-2+2y+3}{2} = 8$$

$$2\left(\frac{5y+1}{2} = 8\right)$$

$$5y + 1 = 16$$

$$5y = 16 - 1$$

$$\frac{5y}{5} = \frac{15}{5}$$

$$\boxed{y = 3}$$

B. Solve for $\overline{MA}$ and $\overline{HT}$

$\overline{MA} = 3y - 2$ $\overline{HT} = 2y + 3$

$\overline{MA} = 3(3) - 2$ $\overline{HT} = 2(3) + 3$

$\overline{MA} = 9 - 2$ $\overline{HT} = 6 + 3$

$\boxed{\overline{MA} = 7\text{cm}}$ $\boxed{\overline{HT} = 9\text{cm}}$

C. Which theorem justifies your answer?

Theorem on Median of a trapezoid

2 Given: $\angle HMA = 115°$

A. What is $m\angle TAM$?

$\boxed{m\angle TAM = 115}$

B. Which theorem justifies your answer?

Theorem 1

- The base angles of an isosceles trapezoid are congruent.

3. Given: $m\angle MHT = 2x - 5$ and $m\angle MAT = 3x + 10$

A. What is the value of x?

$2x - 5 + 3x + 10 = 180$

$5x + 5 = 180$

$5x = 180 - 5$

$\frac{5x = 175}{5}$

$\boxed{x = 35}$

B. Solve for $m\angle MHT$ and $m\angle MAT$

$m\angle MHT = 2x - 5$ $\quad$ $m\angle MAT = 3x + 10$

$m\angle MHT = 2(35) - 5$ $\quad$ $m\angle MAT = 3(35) + 10$

$m\angle MHT = 70 - 5$ $\quad$ $m\angle MAT = 105 + 10$

$\boxed{m\angle MHT = 65}$ $\quad$ $\boxed{m\angle MAT = 115}$

C. Which theorem justifies your answer?

Theorem 2

- Opposite angles in an isoceles trapezoid are supplementary.

Given: Quadrilateral PLAY

4. Given PA = 12 cm and LY = 6 cm

A. What is the area of kite PLAY?

$$A = \frac{d1 \cdot d2}{2}$$

$$A = \frac{12(6)}{2}$$

$$A = \frac{72}{2}$$

$$\boxed{A = 36\ cm^2}$$

B. Which theorem justifies your answer?

Theorem 5

- The area of a kite is half the product of the lengths of its diagonals.