Starter

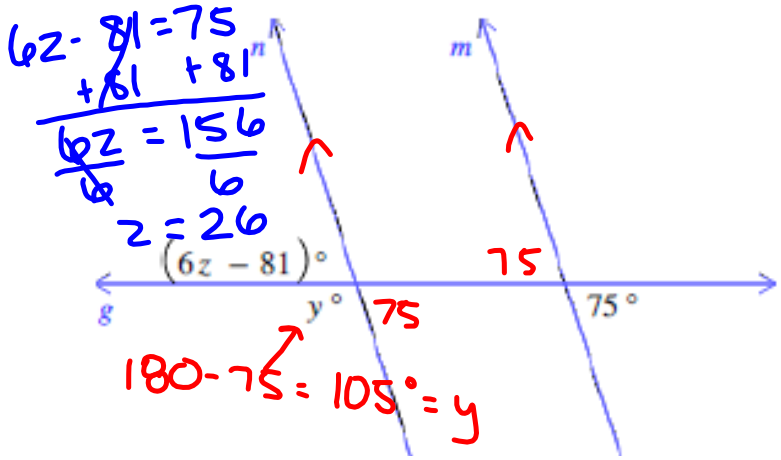
Get out your 3.7 packet and make sure #5-10 on pg.47 are finished. Work on the following problems on a piece of notebook paper.

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$

1. Find the midpoint M of the line segment joining the points $C=(-1, 2)$ and $D=(7, -6)$.

$\left(\frac{-1+7}{2}, \frac{2+-6}{2}\right) \rightarrow (3,-2)$

2. In the figure below, $n \parallel m$. Find the values of y and z.



$62-81=75$

$+81 \quad +81$

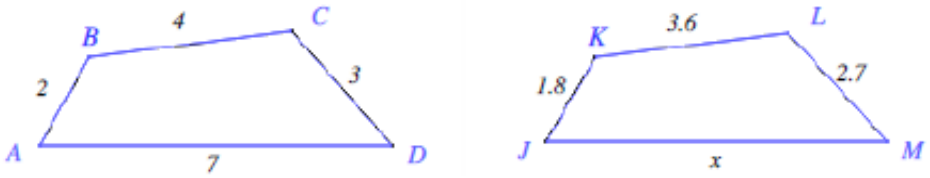
$\frac{6z}{6} = \frac{156}{6}$

$z = 26$

$180-75 = 105° = y$

5. The quadrilaterals $ABCD$ and $JKLM$ are similar. Find the length x of $\overline{MJ}$.

$\frac{2}{1.8} = \frac{4}{3.6} = \frac{3}{2.7} = \frac{7}{x}$

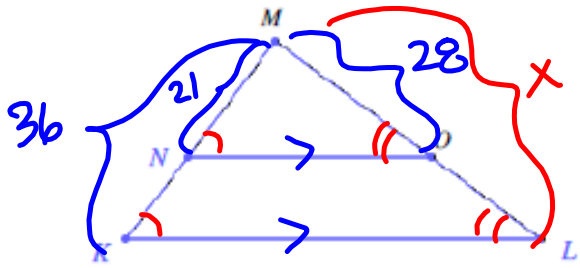


$\frac{2}{1.8} = \frac{7}{x}$

$\frac{2x}{2} = \frac{7(1.8)}{2}$

$x = 6.3$

9. In $\triangle KLM$, $\overline{KL} \parallel \overline{NO}$. Given that $MK = 36, MN = 21$, and $MO = 28$, find ML.

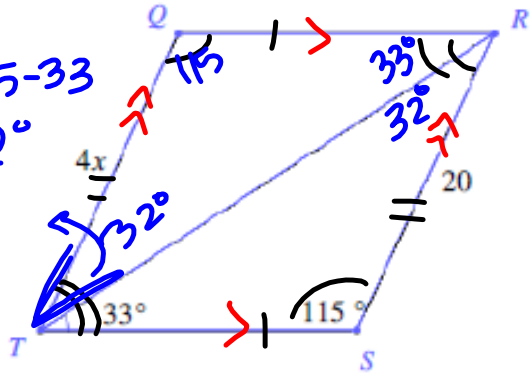


$\frac{21}{36} = \frac{28}{x}$

$\frac{36(28)}{21} = \frac{21x}{21}$

$48 = x$

10. Consider parallelogram $QRST$ below.
Use the information given in the figure to find the following:



180-115-33 = 32°

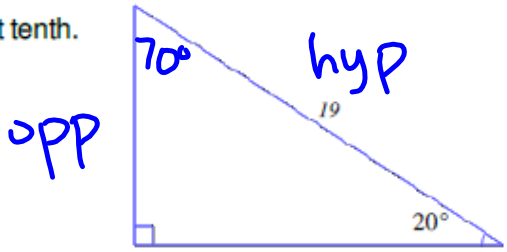
(a) $m\angle QTR = 32°$
(b) $m\angle Q = 115°$
(c) x. $\frac{4x}{4} = \frac{20}{4}$

$x = 5$

12. Solve for x in the triangle. Round your answer to the nearest tenth.

SOH - CAH - TOA

sin: $\frac{opp}{hyp}$ cos: $\frac{adj}{hyp}$ * tan: $\frac{opp}{adj}$



$19 \cdot \cos 20 = \frac{x}{19} \cdot 19$

$19\cos 20 = x$

$17.9 = x$

3.7 Perfecting My Quads

A Practice Understanding Task

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Carlos and Clarita, Tia and Tehani, and their best friend Zac are all discussing their favorite methods for solving quadratic equations of the form $ax^2 + bx + c = 0$. Each student thinks about the related quadratic function $y = ax^2 + bx + c$ as part of his or her strategy.

Carlos: "I like to make a table of values for *x* and find the solutions by inspecting the table."

Clarita: "I like to write the equation in factored form, and then use the factors to find the solutions."

Tia: "I like to treat it like a quadratic function that I am trying to put in vertex form by completing the square. I can then use a square root to undo the squared expression."

Tehani: "I also like to treat it like a quadratic function, but I use the quadratic formula to find the solutions."

Zac: "I like to graph the related quadratic function and use my graph to find the solutions."

Demonstrate how each student might solve each of the following quadratic equations.

Solve: $x^2 - 2x - 15 = 0$	Carlos' Strategy	Zac's Strategy
Clarita's Strategy	Tia's Strategy	Tehani's Strategy

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Solve: $2x^2+5x-12=0$	Carlos' Strategy	Zac's Strategy
Clarita's Strategy	Tia's Strategy	Tehani's Strategy

HW: 11-15 on pg 47-48

Solve: $x^2+4x-8=0$	Carlos' Strategy	Zac's Strategy
Clarita's Strategy	Tia's Strategy	Tehani's Strategy

*5-10 on pg 47 should already be done

$y_1 = x^2+4x-8$

$x = -5.46, 1.46$

Solve:	Carlos' Strategy	Zac's Strategy
$8x^2+2x=3$ $-3\ -3$ $8x^2+2x-3=0$ $a=8$ $b=2$ $c=-3$		$y_1=8x^2+2x-3$ $x=-0.75, 0.5$
Clarita's Strategy	**Tia's Strategy**	**Tehani's Strategy**
		$x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $x=\frac{-2\pm\sqrt{2^2-4\cdot8\cdot-3}}{2\cdot8}$ $x=\frac{-2\pm\sqrt{4+96}}{16}$

Describe why each strategy works.

$$x=\frac{-2\pm\sqrt{100}}{16}$$

$$x=\frac{-2\pm10}{16}$$

$$-\frac{2+10}{16}=\frac{1}{2} \quad \& \quad -\frac{2-10}{16}=-\frac{3}{4}$$

$$x=\frac{1}{2},-\frac{3}{4}$$

As the students continue to try out their strategies, they notice that sometimes one strategy works better than another. Explain how you would decide when to use each strategy.