Starter

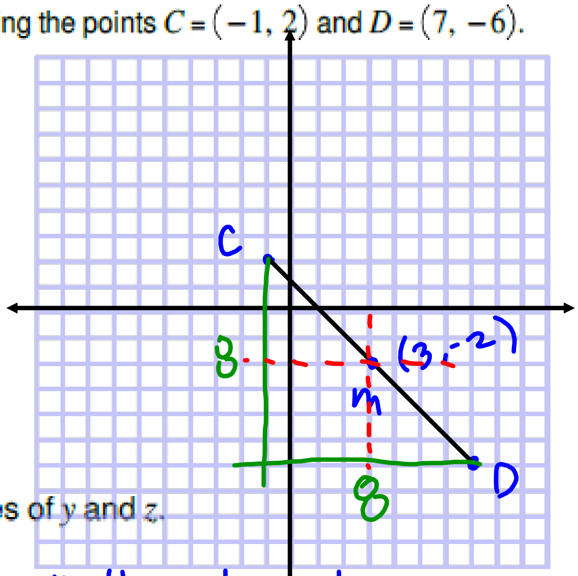
Get out your 3.7 packet and make sure #5-10 on pg.47 are finished. Work on the following problems on a piece of notebook paper.

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

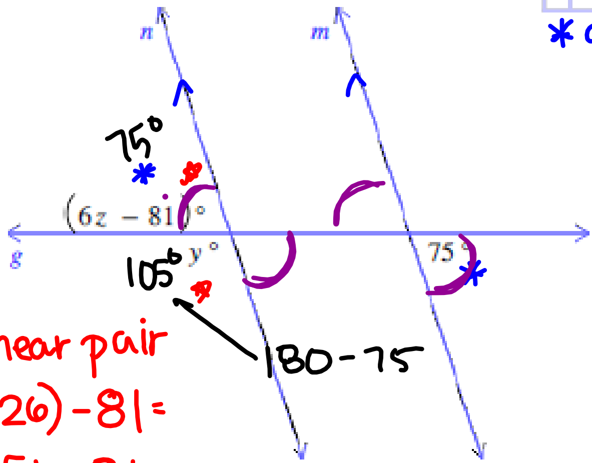
$$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

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

$$(3, -2)$$



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



*alternate exterior

$6z - 81 = 75$
$+81 \quad +81$

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

$z = 26$

*linear pair

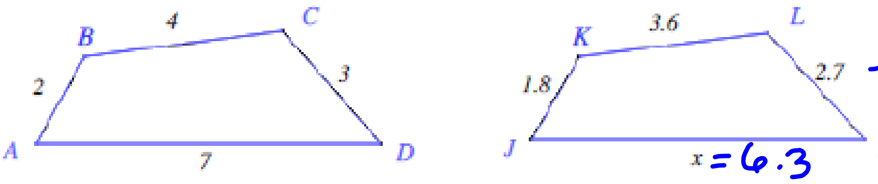
$6(26) - 81 =$

$156 - 81 =$

75

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

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



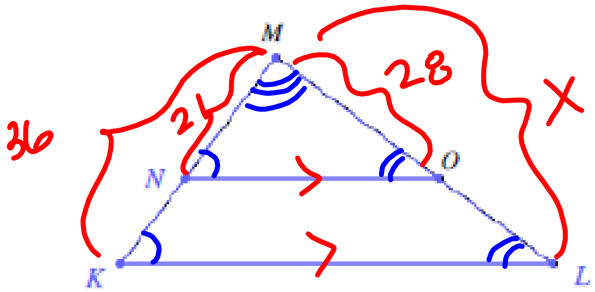
$\frac{4}{3.6} = \frac{7}{x}$

$4x = 7(3.6)$

$\frac{4x}{4} = \frac{25.2}{4}$

$x = 6.3$

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

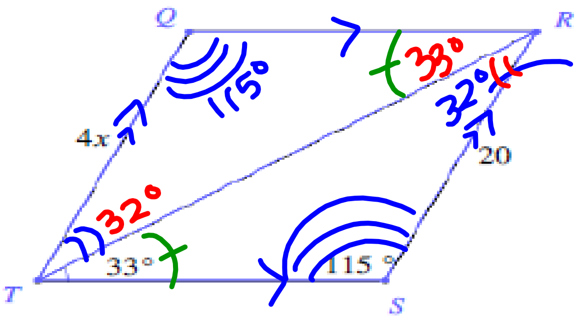


$$\frac{21}{36} = \frac{28}{x}$$

$$\frac{1008}{21} = \frac{21x}{21}$$

$$48 = x$$

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) $m\angle Q = 115°$

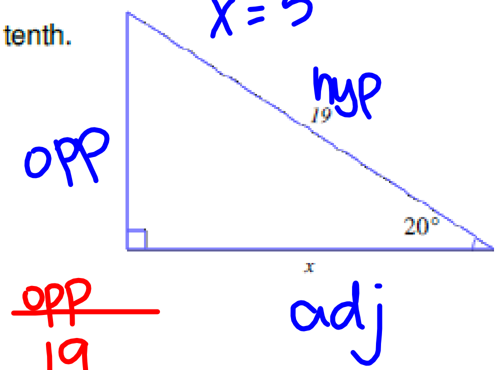
(c) $x. = 5$

$RS = QT$

$$\frac{4x}{4} = \frac{20}{4}$$

$$x = 5$$

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



SOH-CAH-TOA

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

$$\sin 20 = \frac{opp}{19}$$

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

$$17.9 = x$$

3.7 Perfecting My Quads

A Practice Understanding Task

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: $\underbrace{x^2 - 2x - 15}_{y_1} = \underbrace{0}_{y_2}$	Carlos' Strategy	Zac's Strategy $y_1 = x^2 - 2x - 15$ $y_2 = 0$ $(-3,0)$ & $(5,0)$
Clarita's Strategy $(x-5)(x+3)$ -15; -5, 3; -2 $x = 5, -3$	Tia's Strategy	Tehani's Strategy

Solve: $2x^2+5x-12=0$	Carlos' Strategy	Zac's Strategy $y_1=2x^2+5x-12$ $y_2=0$ $(-4,0)$ & $(1.5,0)$
Clarita's Strategy	Tia's Strategy	Tehani's Strategy

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

Solve: $8x^2+2x=3$ $-3\quad -3$ $8x^2+2x-3=0$ $a=8$ $b=2$ $c=-3$	Carlos' Strategy	Zac's Strategy $y_1=8x^2+2x$ $y_2=3$ $\left(-\frac{3}{4},0\right)$ $x=-\frac{3}{4},$
Clarita's Strategy	Tia's Strategy HW: 11-15 on p47-48	Tehani's Strategy $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a}$ $x=\frac{-2\pm\sqrt{2^2-4\cdot8\cdot-3}}{2\cdot8}$

$$x=\frac{-2\pm\sqrt{4+96}}{16}$$

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

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

$$\frac{-2+10}{16}=\frac{8}{16}=\frac{1}{2} \quad \& \quad \frac{-2-10}{16}=\frac{-12}{16}=\frac{-3}{4}$$

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

Describe why each strategy works.

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.