Geometry Honors
Chapter 2 Review

Name:

1. Factor $12x^2 - 5x - 3$

$(4x - 3)(3x + 1)$

2. Factor and solve $10x^2 + 39x + 14 = 0$

$(5x + 2)(2x + 7) = 0$

$x = -\frac{2}{5}, -\frac{7}{2}$

3. Solve for x: $3x + 2(90 - x) = (180 - x) - 40$

$3x + 180 - 2x = 180 - x - 40$

$2x = -40$

$x = -20$

4. The ratio of an angle to its supplement is 4 to 5. Find the measure of the complement.

$4x + 5x = 180$

$x = 20°$

angle $= 80°$

comp $= 10°$

5. The ratio of the complement of an angle to its supplement is 2 to 7. Find the measure of two thirds of the angle.

$\frac{90 - x}{180 - x} = \frac{2}{7}$

$7(90 - x) = 2(180 - x)$

$630 - 7x = 360 - 2x$

$270 = 5x$

$54° = x$

$\frac{2}{3} \cdot 54° = 36°$

6. The sum of an angle and two-thirds of the supplement is 40 degrees greater than the complement. Find the measure of the supplement.

$x + \frac{2}{3}(180 - x) = 90 - x + 40$

$\frac{1}{3}x + 120 = 130 - x$

$\frac{4}{3}x = 10$

$x = 7.5°$

Supp $= 172.5°$

7. The supplement of the complement exceeds the sum of the angle and the complement by 10 degrees. Find the supplement of the complement.

$180-(90-x) = x+90-x+10$

$90+x=100$

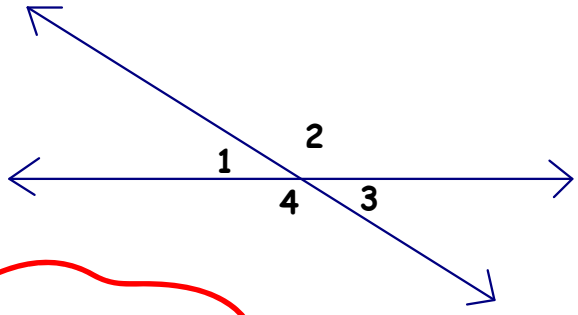
$x=10^\circ$

supp of comp $= 100^\circ$

8. Solve for x and y: $\begin{cases} -7x+4y=-78 \\ 2x-5y=3 \end{cases}$

$x=14, y=5$

Use the following diagram to answer questions 9 and 10.



9. Given: $m\angle 4 = (14x+23)^\circ$

$m\angle 3 = (21x+72)^\circ$

Find: $m\angle 1$

$35x+95=180$

$35x=85$

$x=17/7$

$m\angle 1 = 123^\circ$

10. Given $m\angle 1 = (15x^2)^\circ$

$m\angle 3 = (2x+8)^\circ$

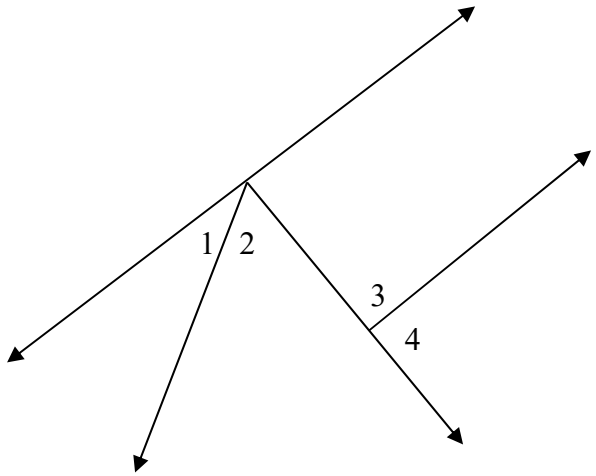
Find: $m\angle 1$

$(5x-4)(3x+2)=0$

$x=\frac{4}{5}, \frac{-2}{3}$

$m\angle 1 = 9.6^\circ$ or $\frac{20}{3}^\circ$

Use the following diagram to answer questions 11 and 12.



11. Given: $\angle 1$ is comp. $\angle 2$

$m\angle 1 = (6x - 7y + 16)^\circ$

$m\angle 2 = (5x + 12y + 17)^\circ$

$m\angle 3 = (10y + 2x + 100)^\circ$

$m\angle 4 = (-5x - 2y + 133)^\circ$

Find: $m\angle 1$

$x = 7$

$y = -4$

$m\angle 1 = 86^\circ$

12. Do not use the givens from problem 11, but continue to use the diagram! Is $\angle 3 \cong \angle 4 = 90^\circ$ if $m\angle 3 = (10x^2)^\circ$ and $m\angle 4 = (25x + 15)^\circ$?

Yes

Show work to support answer

$10x^2 + 25x + 15 = 180$

$10x^2 + 25x - 165 = 0$

$5(2x^2 + 5x - 33) = 0$

$5(2x + 11)(x - 3) = 0$

$x = -\frac{11}{2}, 3$

OR $10x^2 = 90$

$x = \pm 3$

$25x + 15 = 90$

$x = 3$

$x = 3$

13. Given: $\angle LCK \cong \angle MCD$

$m\angle LCD = 68^\circ$

$m\angle LCM = (2x - y)^\circ$

$m\angle MCK = (x + y)^\circ$

$m\angle KCD = (5y - 4)^\circ$

$68^\circ =$

$2x - y = 5y - 4$

$2x - 6y = -4$

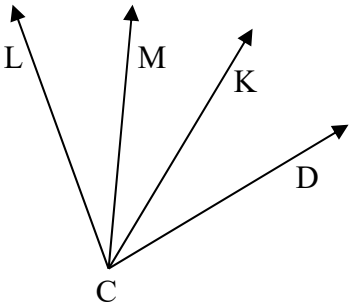
$3x + 5y - 4 = 68$

$3x + 5y = 72$

$x = 103/7$

$y = 39/7$

Find: $m\angle MCK$ (exact answer)



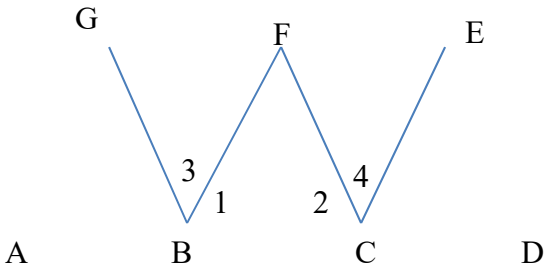
$m\angle MCK = (142/7)^\circ$

$\angle 1 \cong \angle 2$

14. Given: $\overrightarrow{BG}$ bisects $\angle ABF$

$\overrightarrow{CE}$ bisects $\angle FCD$

Prove: $\angle 3 \cong \angle 4$



1. $\overrightarrow{BG}$ bisects $\angle ABF$	1. Given
2. $\overrightarrow{CE}$ bisects $\angle FCD$	2. Given
3. $\angle ABC$ is a st. $\angle$ $\angle BCD$ is a st. $\angle$	3. Assumed from diagram
4. $\angle ABF$ supp $\angle 1$ $\angle FCD$ supp $\angle 2$	4. If two angles form a st. $\angle$, then they are supp
5. $\angle 1 \cong \angle 2$	5. Given
6. $\angle ABF \cong \angle FCD$	6. If angles are $\cong$, then supps are $\cong$.
7. $\angle 3 \cong \angle 4$	7. If 2 $\cong$ angles $\div$ 2, then quotients $\cong$.