Geometry

Unit 1 Geometry Essentials

1.2c Ratios of Segments

Mathematician: _____

Period:_____

LEVEL: EMERGING

Directions: The measures of different segments are listed below. Use them to find the indicated ratios.

$m\overline{AB} = 5$ | $m\overline{AC} = 20$ | $m\overline{DE} = 2$ | $m\overline{DF} = 7$ | $m\overline{GH} = 3$ | $m\overline{GI} = 12$ | $m\overline{GJ} = 18$

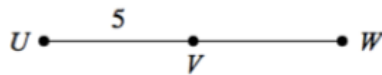1) $m\overline{AB}$ to $m\overline{AC}$

2) $m\overline{DE}$ to $m\overline{DF}$

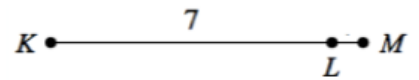3) $\dfrac{m\overline{GH}}{m\overline{GJ}}$

4) $\dfrac{m\overline{GH}}{m\overline{GI}+m\overline{GJ}}$

Directions: Use the given ratio to solve for the length of the indicated line segment.
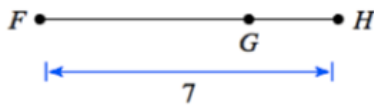
5) $\dfrac{m\overline{UV}}{m\overline{VW}} = \dfrac{4}{7}$

$U \bullet \overset{5}{\underset{V}{\longrule}} \bullet W$

6) $\dfrac{m\overline{LM}}{m\overline{KL}} = \dfrac{3}{14}$

$K \bullet \overset{7}{\longrule} \bullet M$ L

$m\overline{VW} = $ _____

$m\overline{LM} = $ _____

7) $\dfrac{m\overline{FH}}{m\overline{FG}} = \dfrac{7}{3}$

$F \bullet \longrule \underset{G}{\bullet} \bullet H$ $\underset{7}{\longleftrightarrow}$

8) $\dfrac{m\overline{HG}}{m\overline{HF}} = \dfrac{1}{5}$

$H \bullet \overset{7}{\longrule} \underset{G}{\bullet} \bullet F$
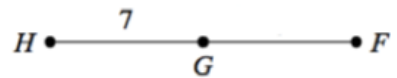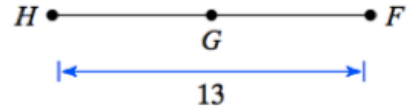
$m\overline{FG} = $ _____

$m\overline{HF} = $ _____

LEVEL: PROFICIENT

Directions: Use the given ratio to solve for the length of the indicated line segment.

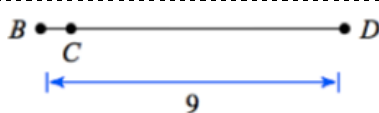9) $\dfrac{m\overline{EF}}{m\overline{FG}} = \dfrac{7}{4}$

$E \bullet \longrule \underset{F}{\bullet} \overset{2}{\longrule} \bullet G$

10) $\dfrac{m\overline{HF}}{m\overline{GF}} = \dfrac{4}{1}$

$H \bullet \longrule \underset{G}{\bullet} \bullet F$ $\underset{13}{\longleftrightarrow}$

$m\overline{EG} = $ _____

$m\overline{HG} = $ _____

11) $\dfrac{m\overline{BD}}{m\overline{CD}} = \dfrac{10}{3}$

$B \bullet \underset{C}{\bullet} \longrule \bullet D$ $\underset{9}{\longleftrightarrow}$

12) $\dfrac{m\overline{TU}}{m\overline{UV}} = \dfrac{7}{2}$

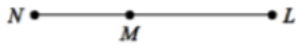$T \bullet \longrule \underset{U}{\bullet} \overset{1}{\bullet} V$

$m\overline{BC} = $ _____

$m\overline{TV} = $ _____

Directions: Find the location of the indicated point given the following information.

13) Find the location of point M that divides the line segment NL into two parts with the ratio 2:3. The length of NL is 30.

N •————•——————• L
        M

$m\overline{NM} =$ _____

14) Find the location of point V that divides the line segment WU into two parts with the ratio 5:1. The length of WU is 18.

W •————————————•—• U
                V

$m\overline{WV} =$ _____

15) Find the location of point D that divides the line segment CE into two parts with the ratio 7:2. The length of DE is 6.

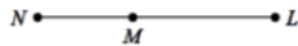C •———————————•——• E
                  D

$m\overline{CD} =$ _____

LEVEL: MASTERY

16) Error analysis: Emily showed her work for the following problem. Identify which step she made the error in:

"Point M partitions the line segment $\overline{NL}$ into a ratio of 4:5. What is the length of $\overline{NM}$ if $\overline{ML}$ is 30?"

N •————•————————• L
          M

Step 1: $\frac{4}{5} = \frac{\overline{NM}}{\overline{ML}}$ so $\frac{4}{5} = \frac{30}{\overline{NM}}$

Step 2: $5(30) = 4(\overline{NM})$ so $150 = 4(\overline{NM})$

Step 3: $\overline{NM} = 37.5$

Answer: Step _____

17) Construct a line with a ratio of 5:4. Give the lengths of each segment.

H •————————————•————• J
                I

$m\overline{HI} =$ _____ $m\overline{IJ} =$ _____

18) Create a line such that H partitions the segment into a ratio of 11:5 Give the lengths of each segment.

G •————————————•——• I
                H

$m\overline{GH} =$ _____ $m\overline{GI} =$ _____

Directions: Point B is on the line segment $\overline{AC}$ in the following problems. Draw the diagram and then solve.

19) Point B partitions the line segment $\overline{AC}$ into a ratio of 4:5. What is the length of $\overline{AB}$ if $\overline{AC}$ is 36?

20) Point B partitions the line segment $\overline{AC}$ into a ratio of 2:3. What is the length of $\overline{AC}$ if $\overline{AB}$ is 4?

21) Point B partitions the line segment $\overline{AC}$ into a ratio of 1:7. What is the length of $\overline{AB}$ if $\overline{AC}$ is 64?

Unit 1.2C Worksheet Answers

1. $\frac{1}{4}$
2. $\frac{2}{7}$
3. $\frac{1}{6}$
4. $\frac{1}{10}$
5. $\overline{VW} = 8.75$
6. $\overline{LM} = 1.5$
7. $\overline{FG} = 3$
8. $\overline{HF} = 35$
9. $\overline{EG} = 5.5$
10. $\overline{HG} = 9.75$
11. $\overline{BC} = 6.3$
12. $\overline{TV} = 4.5$
13. $\overline{NM} = 12$
14. $\overline{WV} = 3$
15. $\overline{CD} = 21$
16. Step 1
17. Answers may vary
18. Answers may vary
19. $\overline{AB} = 16$
20. $\overline{AC} = 10$
21. $\overline{AB} = 8$