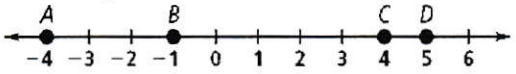
Name Answers Date

1.2 – Measuring Segments

In Exercises 1–6, use the figure below. Find the length of each segment.

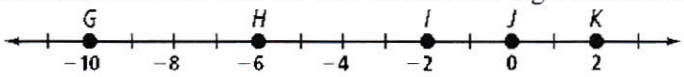


1. $\overline{AB}$ 3
2. $\overline{BC}$ 5
3. $\overline{AC}$ 8
4. $\overline{AD}$ 9
5. $\overline{BD}$ 6
6. $\overline{CD}$ 1

For Exercises 7–9, use the figure at the right.

7. If $PR = 25$ and $PQ = 12$, then $QR =$ 13.
8. If $PR = 19$ and $QR = 12$, then $PQ =$ 7.
9. If $PR = 10$ and $PQ = 4$, then $QR =$ 6.

Use the number line below for #10–12. Tell whether the segments are congruent.



10. $\overline{GH}$ and $\overline{HI}$ Yes
11. $\overline{GH}$ and $\overline{IK}$ Yes
12. $\overline{HJ}$ and $\overline{IK}$ No

13. Reasoning Points A, Q, and O are collinear. $AO = 10$, $AQ = 15$, and $OQ = 5$. What must be true about their positions on the line?

Point O is between points A and Q

Use the figure at the right. (Show all algebraic work!)

14. Given: $ST = x + 3$ and $TU = 4x - 6$.

a. What is the value of ST?

$x+3 = 4x-6$

$3 = 3x-6$

$9 = 3x$

$3 = x$

$\therefore ST = 6$

b. What is the value of SU?

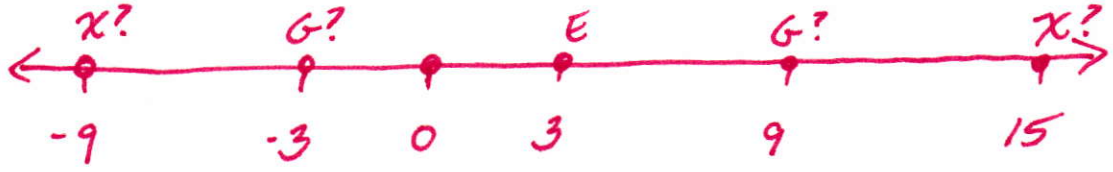
$ST = 6$

$TU = 6$

$ST + TU = SU$

$ST + TU = 12$

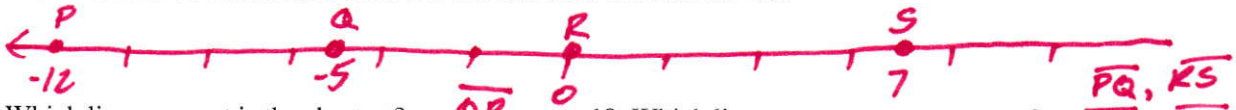
15. On a number line, suppose point E has a coordinate of 3, $EG = 6$, and $EX = 12$. Is point G the midpoint of $\overline{EX}$? What are possible coordinates for G and X? (Show work.)



No. Point G is at 9 or -3. Point X is at -9 or 15.

On a number line, the coordinates of P, Q, R, and S are -12, -5, 0, and 7, respectively.

16. Draw a sketch of this number line. Use this sketch to answer #17–20.



17. Which line segment is the shortest? $\overline{QR}$

18. Which line segment is the longest? $\overline{PS}$

19. Which line segments are congruent? $\overline{PQ}$, $\overline{RS}$ ~~$\overline{PR}$, $\overline{QS}$~~

20. What is the coordinate of the midpoint of $\overline{PR}$? -6

21. You plan to drive north from city A to town B and then continue north to city C. The distance between city A and town B is 39 mi, and the distance between town B and city C is 99 mi.

a. Assuming you follow a straight driving path, after how many miles of driving will you reach the midpoint between city A and city C?

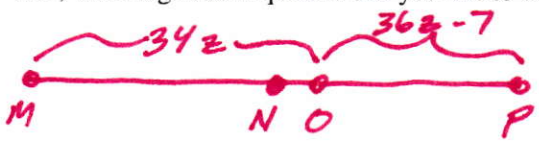
$39 + 99 = 138$

$\frac{138}{2} = \boxed{69 \text{ miles}}$

b. If you drive an average of 46 mi/h, how long will it take you to drive from city A to city C?

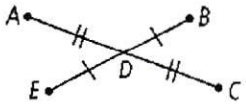
$\frac{46 \text{ mi}}{1 \text{ hr}} = \frac{138 \text{ mi}}{x}$ $\quad \boxed{x = 3 \text{ hrs}}$

22. Point O lies between points M and P on a line. $OM = 34z$ and $OP = 36z - 7$. If point N is the midpoint of $\overline{MP}$, what algebraic equation can you use to find MN?



$MN = \frac{1}{2}(34z + 36z - 7)$

Use the diagram at the right for #23–24.



23. If $DC = 6x$ and $DA = 4x + 18$, find the value of x. Then find AD, DC, and AC.

$6x = 4x + 18$

$2x = 18$

$x = 9$

$AD = 4x + 18$

$AD = 54$

$DC = 54$

$AC = 108$

24. If $EB = 4y - 12$ and $ED = y + 17$, find the value of y. Then find ED, DB, and EB.

$4y - 12 = (y + 17) + (y + 17)$

$4y - 12 = 2y + 34$

$2y = 46$

$y = 23$

$ED = y + 17$

$ED = 40$

$DB = 40$

$EB = 80$

25. Is it possible that $PQ + QR < PR$? Explain.

No. If it looks like this: P Q R, then $PQ + QR = PR$.

If it looks like this: Q, P, R, then $PQ + QR > PR$.

Thus, $PQ + PR \geq PR$ no matter the situation.