1.2 Start Thinking

Measurements of distance are made easy with tools like rulers and measuring tapes. Use a straightedge without measurement units to draw a line on an unlined piece of paper. Then, without using any sort of numbered measuring technique, recreate the line you drew. Use a ruler to compare the two lines.

How could you use a compass to mark half the length of a drawn line segment without ever measuring it?

1.2 Warm Up

Plot the point in the coordinate plane.

1. $A(8, -5)$

2. $B(2, 0)$

3. $C(5, -1)$

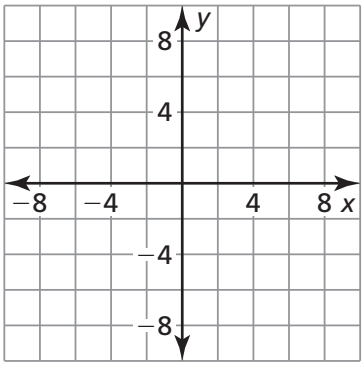
4. $D(1, 3)$

5. $E(1, -3)$

6. $F(4, 4)$

7. $G(6, 4)$

8. $H(-3, 1)$



1.2 Cumulative Review Warm Up

Simplify.

1. $\frac{2}{9} + \frac{3}{2}$

2. $4 - 2\frac{1}{4}$

3. $\frac{2}{5} \div \frac{1}{10}$

4. $\frac{3}{9} \times \frac{3}{4}$

5. $\frac{2}{5} \times \frac{10}{5}$

6. $\frac{4}{10} \div \frac{2}{38}$

Name _____ Date _____

1.2 Practice A

In Exercises 1 and 2, use a ruler to measure the length of the segment to the nearest eighth of an inch.

1.

2.

In Exercises 3–5, plot the points in a coordinate plane. Then determine whether $\overline{ST}$ and $\overline{UV}$ are congruent.

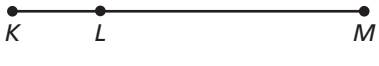
3. $S(-1, 2)$, $T(-1, 1)$, $U(3, -5)$, $V(3, -2)$

4. $S(1, -1)$, $T(1, 1)$, $U(3, -4)$, $V(5, -4)$

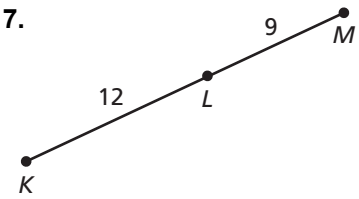
5. $S(1, 3)$, $T(1, -3)$, $U(3, -2)$, $V(-3, -2)$

In Exercises 6–8, find *KM*.

6.



7.



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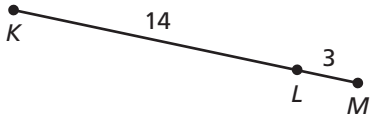
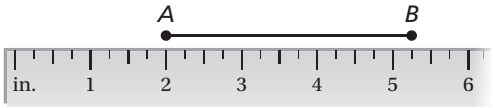


9. Describe and correct the error in finding the length of $\overline{AB}$.



✗ $|AB| = |1 - 5.25| = 4.25$

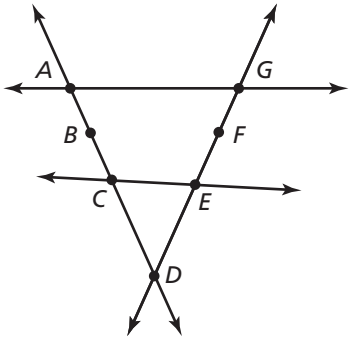
10. A man is 76 inches tall. The length from his head to his shoulders is 14 inches, and the length from his waist to his shoulders is 30 inches. What is the length from his feet to his waist?

In Exercises 11–13, determine whether the statement is true or false. Explain your reasoning.

11. F is between E and G.

12. C is between B and D.

13. A is between B and F.



Name_____ Date _____

1.2 Practice B

In Exercises 1 and 2, use a ruler to measure the length of the segment to the nearest eighth of an inch.

1.

2.

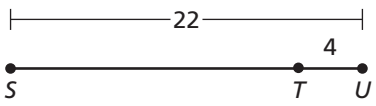
In Exercises 3 and 4, plot the points in a coordinate plane. Then determine whether $\overline{AB}$ and $\overline{CD}$ are congruent.

3. $A(-7, 1), B(-4, 1), C(3, -5), D(3, -2)$

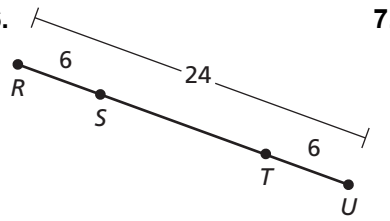
4. $A(1, -1), B(1, 1), C(3, -4), D(5, -4)$

In Exercises 5–7, find *ST*.

5.



6.



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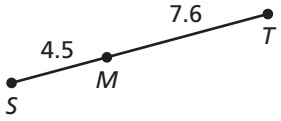
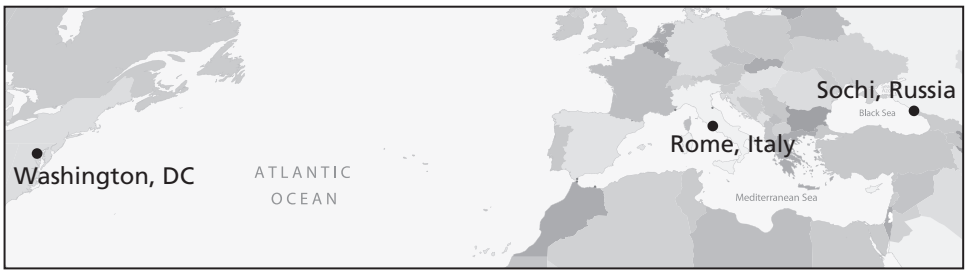


8. The 2014 Winter Olympic Games were held in Sochi, Russia. The distance between Washington, DC and Rome, Italy is about 4480 miles. The distance between Washington, DC and Sochi, Russia is about 5500 miles. What is the distance between Rome, Italy and Sochi, Russia?



In Exercises 9 and 10, point *B* is between *A* and *C* on $\overline{AC}$. Use the information to write an equation in terms of *x*. Then solve the equation and find *AB*, *BC*, and *AC*.

9. $AB = 13 + 2x$
$BC = 12$
$AC = x + 32$

10. $AB = 8x + 5$
$BC = 5x - 9$
$AC = 74$

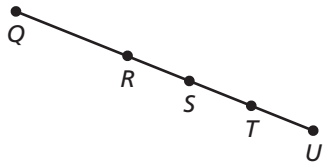
11. You participate in a 150-mile bicycle trip from Madison, Wisconsin to Chicago, Illinois. On the first day, you bike 46.8 miles. On the second day, you bike 51.4 miles. How many miles do you bike on the third day? Which day did you bike the most miles?

Name _____ Date _____

1.2 Enrichment and Extension

Measuring and Constructing Segments

1. In the diagram, $QU = 120$, $SU = 50$, and $RS = ST = TU$. Find the indicated values.

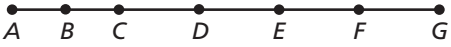


a. RS **b.** QR

c. RT **d.** QS

e. RU **f.** QT

2. You draw a line segment $\overline{AG}$ and state that $\overline{AB} \cong \overline{BC}$, $\overline{CD} \cong \overline{DE} \cong \overline{EF} \cong \overline{FG}$, and $AG = 16$.



Your friend then draws a second segment $\overline{HL}$ and states that $\overline{AB} \cong \overline{HI}$, $\overline{CD} \cong \overline{IJ} \cong \overline{JK} \cong \overline{KL}$, and $HL = 11$. Find each indicated measure.

a. HI **b.** CD **c.** IL

d. AD **e.** DG **f.** HJ

In Exercises 3–5, use the diagram from Exercise 2 to complete the statement.

3. $\overline{CF} \cong \overline{?}$ **4.** $\overline{HJ} \cong \overline{?}$ **5.** $\overline{HL} \cong \overline{?}$

In Exercises 6–8, point *M* is between *L* and *N* on $\overline{LN}$. Use the given information to write an equation in terms of *x*. Solve the equation (disregard any answers that do not make sense in the context of the problem). Then find any missing values.

6. $LM = x^2$
$MN = x^2 + 9x$
$LN = 56$

7. $LM = \sqrt{x}$
$MN = 2\sqrt{x} + 1$
$LN = 13$

8. $LM = \frac{1}{2x} + 3$
$MN = \frac{2}{3}$
$LN = \frac{14}{3} + \frac{1}{x}$

Name_____ Date _____

1.2 Puzzle Time

Why Did The Queen Have The King Measure The Rug?

Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Point *B* is between *A* and *C* on $\overline{AC}$. Using the information provided, find the values of *x*, *AB*, and *BC*.

1. $AC = 95, AB = 15x - 10, BC = 5x + 5$
2. $AC = 8x - 16, AB = 3x - 8, BC = 4x$
3. $AC = x - 0.4, AB = x - 4.9, BC = 0.5x$
4. $AC = 38\frac{3}{4}, AB = 6x, BC = 8x + \frac{1}{4}$
5. Line segments that have the same length are called similar segments. True or false?
6. The length of a horizontal segment is the absolute value of the difference of the *x*-coordinates of the endpoints. Yes or no?
7. Points on a line can be matched with real numbers. Correct or incorrect?

B	A	H	C	E	L	A	U	W	I	A	I	H	N	E	S
no	true	9	19	16	$\frac{1}{2}$	7	1	65	incorrect	5	$\frac{1}{2}$	0.3	6	1.9	30
A	**M**	**G**	**I**	**O**	**F**	**O**	**I**	**D**	**R**	**E**	**U**	**L**	**N**	**E**	**R**
$22\frac{1}{4}$	$11\frac{1}{2}$	4.1	$\frac{1}{2}$	$16\frac{1}{2}$	$\frac{3}{8}$	4.5	5.5	32	8	63	$2\frac{3}{4}$	false	2	yes	correct