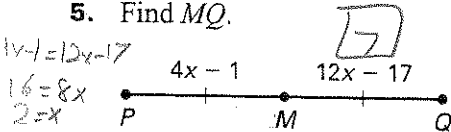


Find the indicated length.

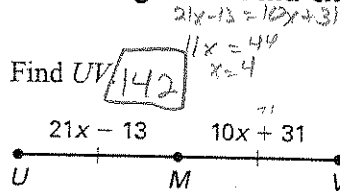
- Line JK bisects \overline{LM} at point J . Find JM if $LJ = 23$ centimeters. $\boxed{23\text{cm}}$
- Line WX bisects \overline{YZ} at point W . Find YZ if $WZ = 9\frac{5}{8}$ inches. $\boxed{19\frac{1}{4}''}$
- Point F bisects \overline{GH} . Find GH if $GF = 14\frac{7}{12}$ feet. $\boxed{29\frac{1}{6}'}$
- Point R bisects \overline{ST} . Find RT if $ST = 16.9$ meters. $\boxed{RT = 8.45\text{m}}$

In the diagram, M is the midpoint of the segment. Find the indicated length.

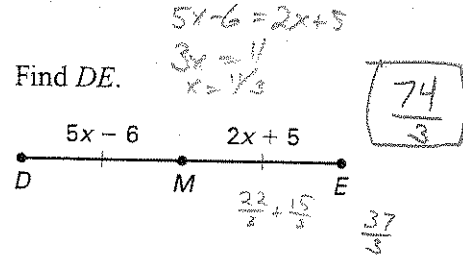
5. Find MQ .



6. Find UV .



7. Find DE .



Find the coordinates of the midpoint of the segment with the given endpoints.

8. $A(6, -3)$ and $B(10, 5)$

$\boxed{(8, 1)}$

9. $M(14, 7)$ and $N(-9, 1)$

$\boxed{(2.5, 4)}$

Use the given endpoint R and midpoint M of \overline{RS} to find the coordinates of the other endpoint S .

12. $R(8, 0)$, $M(4, -5)$

$\boxed{S(0, -10)}$

13. $R(7, -17)$, $M(-2, 3)$

$\boxed{S(-11, 23)}$

14. $R(-6, -9)$, $M(8, -5.5)$

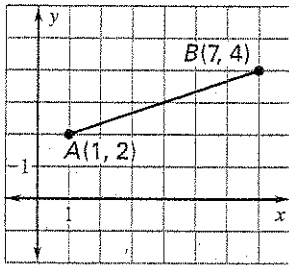
$\boxed{S(22, -2)}$

15. $R(11, -16)$, $M(-3.5, -9.5)$

$\boxed{S(-18, -3)}$

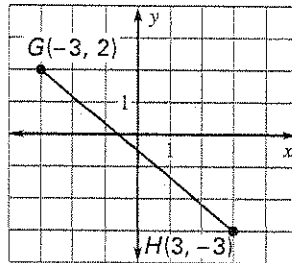
Find the length of the segment. Round to the nearest tenth of a unit.

16.



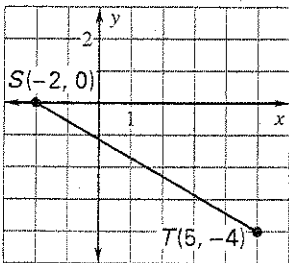
$\sqrt{40}$
 ≈ 6.3

17.



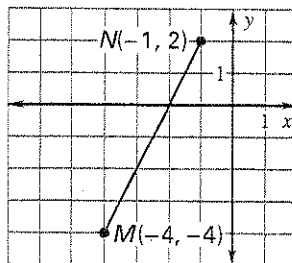
$\sqrt{36 + 25} = \sqrt{61} \approx 7.8$

18.



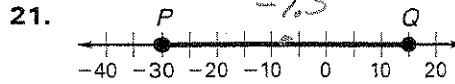
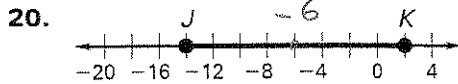
$49 + 16$
 $\sqrt{65}$
 ≈ 8.1

19.



$\sqrt{9 + 36} = \sqrt{45} \approx 6.7$

Find the length of the segment. Then find the coordinate of the midpoint of the segment.



The endpoints of two segments are given. Find each segment length. Tell whether the segments are congruent.

22. $\overline{AB}: A(7, 2), B(0, -3) = \sqrt{74}$
 $\overline{CD}: C(-4, 12), D(-1, 4) = \sqrt{73}$
 Not \cong

23. $\overline{RS}: R(5, 6), S(11, -2) = 10$
 $\overline{TU}: T(-7, 9), U(3, 9) = 10$
 \cong

In Exercises 26–29, find the distance between the two cities using the information in the table. Each data point is from a coordinate system used for calculating long-distance telephone rates. Round your answer to the nearest whole unit.

Buffalo, NY	(5075, 2326)	Omaha, NE	(6687, 4595)
Chicago, IL	(5986, 3426)	Providence, RI	(4550, 1219)
Dallas, TX	(8436, 4034)	San Diego, CA	(9468, 7629)
Miami, FL	(8351, 527)	Seattle, WA	(6336, 8896)

26. Buffalo and Miami
 3737 miles

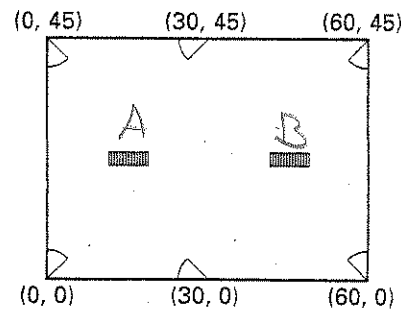
27. Chicago and San Diego
 5458

In Exercises 4–7, tell whether the three given points are collinear.

4. $A(2, 6), B(5, 2), C(8, -2)$
 $m_{AB} = \frac{-4}{3}$
 $m_{BC} = \frac{-4}{3}$
 Collinear

5. $A(2, 3), B(2, 6), C(6, 3)$
 $m_{AB} = \frac{-3}{0} = \text{undefined}$
 $m_{BC} = \frac{3}{-4}$
 Noncollinear

12. **Floor Plan** An engineer is designing a department store. The diagram at the right shows the first floor of the store. The store is to have one escalator going up to the second floor and one escalator going down to the first floor from the second floor. Each escalator is supposed to be equidistant from four of the six store entrances. The labeled points shown represent the store entrances.



- Where should the escalators be placed?
- How far apart should the escalators be placed?

a) $A(15, 22.5)$
 $B(45, 22.5)$
 b) 30