

Assignment Guide and Homework Check

ASSIGNMENT

Basic: 1, 2, 3–25 odd, 32, 34, 38–45

Average: 1, 2–28 even, 32, 34, 38–45

Advanced: 1, 2, 6, 8, 12, 14, 20–28 even, 29–45

HOMEWORK CHECK

Basic: 7, 9, 13, 21, 32

Average: 12, 20, 26, 28, 32

Advanced: 14, 22, 32, 33, 37

1.2 Exercises

Dynamic Solutions available at BigIdeasMath.com

Vocabulary and Core Concept Check

- WRITING** Explain how \overline{XY} and XY are different.
- DIFFERENT WORDS, SAME QUESTION** Which is different? Find “both” answers.



Find $AC + CB$.

Find $BC - AC$.

Find AB .

Find $CA + BC$.

Monitoring Progress and Modeling with Mathematics

In Exercises 3–6, use a ruler to measure the length of the segment to the nearest tenth of a centimeter. (See Example 1.)

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CONSTRUCTION In Exercises 7 and 8, use a compass and straightedge to construct a copy of the segment.

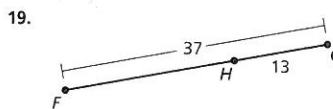
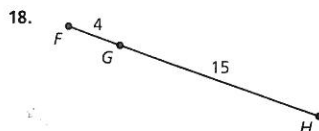
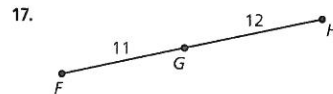
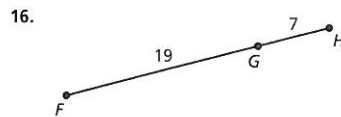
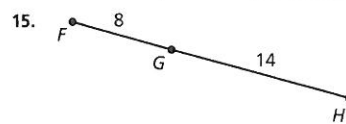
- Copy the segment in Exercise 3.
- Copy the segment in Exercise 4.

In Exercises 9–14, plot the points in a coordinate plane. Then determine whether \overline{AB} and \overline{CD} are congruent. (See Example 2.)

- $A(-4, 5)$, $B(-4, 8)$, $C(2, -3)$, $D(2, 0)$
- $A(6, -1)$, $B(1, -1)$, $C(2, -3)$, $D(4, -3)$
- $A(8, 3)$, $B(-1, 3)$, $C(5, 10)$, $D(5, 3)$
- $A(6, -8)$, $B(6, 1)$, $C(7, -2)$, $D(-2, -2)$
- $A(-5, 6)$, $B(-5, -1)$, $C(-4, 3)$, $D(3, 3)$
- $A(10, -4)$, $B(3, -4)$, $C(-1, 2)$, $D(-1, 5)$

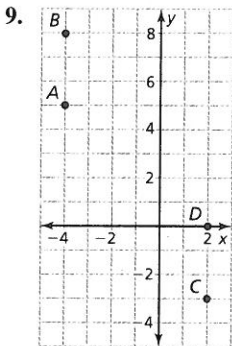
16 Chapter 1 Basics of Geometry

In Exercises 15–22, find FH . (See Example 3.)

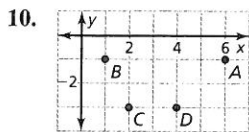


ANSWERS

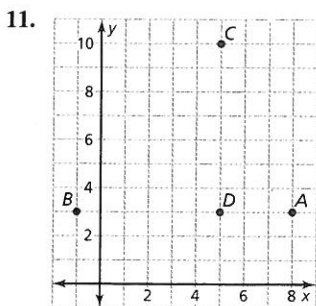
- \overline{XY} represents the segment XY , while XY represents the distance between points X and Y (the length of \overline{XY}).
- Find $BC - AC$.; 4; 10
- 3.5 cm
- 6 cm
- 4.5 cm
- 7 cm
-
- See Additional Answers.



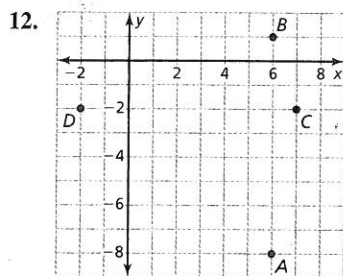
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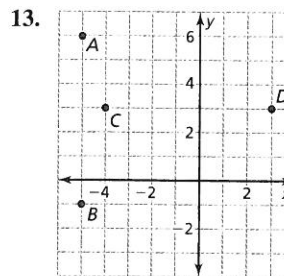
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no



yes



yes

14–19. See Additional Answers.

Dynamic Teaching Tools

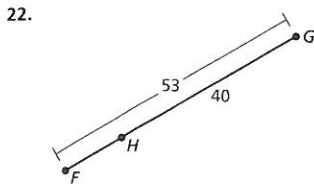
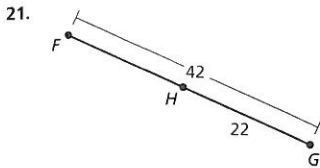
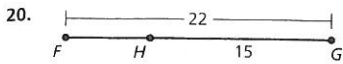
Dynamic Assessment & Progress Monitoring Tool

Interactive Whiteboard Lesson Library

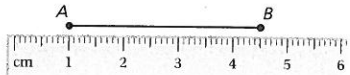
Dynamic Classroom with Dynamic Investigations

ANSWERS

20. 7
 21. 20
 22. 13
 23. The absolute value should have been taken; $AB = |1 - 4.5| = 3.5$
 24. The difference should have been taken; $AB = |1 - 4.5| = 3.5$
 25. $2\frac{1}{4}$ in., $1\frac{3}{4}$ in.; $\frac{1}{2}$ in.; $1\frac{2}{7}$
 26. a. 1883 mi
 b. about 50 mi/h
 27. a. true; B is on \overleftrightarrow{AC} between A and C .
 b. false; B , C , and E are not collinear.
 c. true; D is on \overleftrightarrow{AH} between A and H .
 d. false; C , E , and F are not collinear.
 28. a. $8x - 1$
 b. $5y + 20$



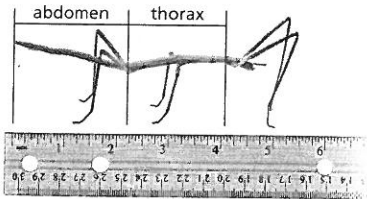
ERROR ANALYSIS In Exercises 23 and 24, describe and correct the error in finding the length of AB .



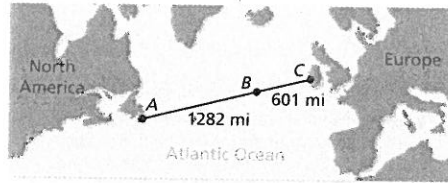
23. $AB = 1 - 4.5 = -3.5$

24. $AB = |1 + 4.5| = 5.5$

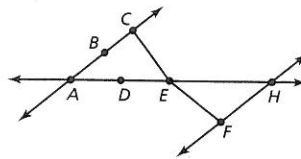
25. **ATTENDING TO PRECISION** The diagram shows an insect called a walking stick. Use the ruler to estimate the length of the abdomen and the length of the thorax to the nearest $\frac{1}{4}$ inch. How much longer is the walking stick's abdomen than its thorax? How many times longer is its abdomen than its thorax?



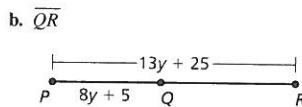
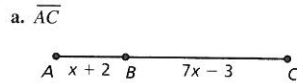
26. **MODELING WITH MATHEMATICS** In 2003, a remote-controlled model airplane became the first ever to fly nonstop across the Atlantic Ocean. The map shows the airplane's position at three different points during its flight. Point A represents Cape Spear, Newfoundland, point B represents the approximate position after 1 day, and point C represents Mannin Bay, Ireland. The airplane left from Cape Spear and landed in Mannin Bay. (See Example 4.)



- a. Find the total distance the model airplane flew.
 b. The model airplane's flight lasted nearly 38 hours. Estimate the airplane's average speed in miles per hour.
27. **USING STRUCTURE** Determine whether the statements are true or false. Explain your reasoning.



- a. B is between A and C .
 b. C is between B and E .
 c. D is between A and H .
 d. E is between C and F .
28. **MATHEMATICAL CONNECTIONS** Write an expression for the length of the segment.

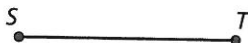


ANSWERS

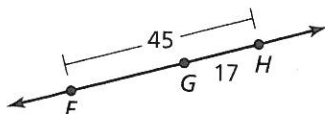
29. a. $3x + 6 = 21$; $x = 5$; $RS = 20$;
 $ST = 1$; $RT = 21$
 b. $7x - 24 = 60$; $x = 12$; $RS = 20$;
 $ST = 40$; $RT = 60$
 c. $2x + 3 = x + 10$; $x = 7$; $RS = 6$;
 $ST = 11$; $RT = 17$
 d. $4x + 10 = 8x - 14$; $x = 6$;
 $RS = 15$; $ST = 19$; $RT = 34$
30. See Additional Answers.
31. a. 64 ft
 b. about 0.24 min
 c. You might walk slower if other people are in the hall.
32. cousin; If you do not line up an object at zero, then take the absolute value of the difference of the measurements at both ends of the object.
33. 296.5 mi; If the round-trip distance is 647 miles, then the one-way distance is 323.5 miles. $323.5 - 27 = 296.5$
34. The number of wins plus the number of losses equals the number of games played each year.
35. $|a - c| = |e - f|$; b and d are not used because when the x -values are the same, you subtract the y -values to find the length of the segment, and vice versa.
- 36–45. See Additional Answers.

Mini-Assessment

Use \overline{ST} .



- Measure the length of \overline{ST} to the nearest $\frac{1}{8}$ inch. $1\frac{1}{8}$ inches
- Construct a segment congruent to \overline{ST} using a compass and straightedge. Check students' work.
- Plot $A(-2, -3)$, $B(5, -3)$, $C(6, -1)$, and $D(1, -1)$ in a coordinate plane. Then determine whether \overline{AB} and \overline{CD} are congruent. \overline{AB} is not congruent to \overline{CD} .
- Find FG .

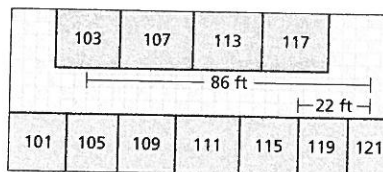


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29. **MATHEMATICAL CONNECTIONS** Point S is between points R and T on \overline{RT} . Use the information to write an equation in terms of x . Then solve the equation and find RS , ST , and RT .
- a. $RS = 2x + 10$ b. $RS = 3x - 16$
 $ST = x - 4$ $ST = 4x - 8$
 $RT = 21$ $RT = 60$
- c. $RS = 2x - 8$ d. $RS = 4x - 9$
 $ST = 11$ $ST = 19$
 $RT = x + 10$ $RT = 8x - 14$

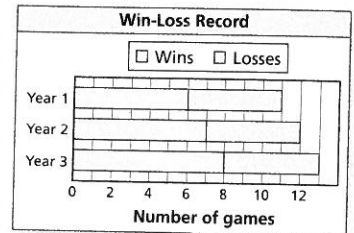
30. **THOUGHT PROVOKING** Is it possible to design a table where no two legs have the same length? Assume that the endpoints of the legs must all lie in the same plane. Include a diagram as part of your answer.

31. **MODELING WITH MATHEMATICS** You have to walk from Room 103 to Room 117.



- a. How many feet do you travel from Room 103 to Room 117?
 b. You can walk 4.4 feet per second. How many minutes will it take you to get to Room 117?
 c. Why might it take you longer than the time in part (b)?
32. **MAKING AN ARGUMENT** Your friend and your cousin discuss measuring with a ruler. Your friend says that you must always line up objects at the zero on a ruler. Your cousin says it does not matter. Decide who is correct and explain your reasoning.

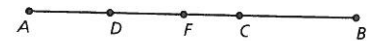
33. **REASONING** You travel from City X to City Y. You know that the round-trip distance is 647 miles. City Z is 27 miles from City X. Find the distance from City Z to City Y. Justify your answer.
34. **HOW DO YOU SEE IT?** The bar graph shows the win-loss record for a lacrosse team over a period of three years. Explain how you can apply the Ruler Postulate (Post. 1.1) and the Segment Addition Postulate (Post. 1.2) when interpreting a stacked bar graph like the one shown.



35. **ABSTRACT REASONING** The points (a, b) and (c, b) form a segment, and the points (d, e) and (d, f) form a segment. Create an equation assuming the segments are congruent. Are there any letters not used in the equation? Explain.
36. **MATHEMATICAL CONNECTIONS** In the diagram, $\overline{AB} \cong \overline{BC}$, $\overline{AC} \cong \overline{CD}$, and $AD = 12$. Find the lengths of all segments in the diagram. Suppose you choose one of the segments at random. What is the probability that the measure of the segment is greater than 3? Explain your reasoning.



37. **CRITICAL THINKING** Is it possible to use the Segment Addition Postulate (Post. 1.2) to show $FB > CB$ or that $AC > DB$? Explain your reasoning.



Maintaining Mathematical Proficiency

Reviewing what you learned in previous grades and lessons

Simplify. (*Skills Review Handbook*)

38. $\frac{-4 + 6}{2}$

39. $\sqrt{20 + 5}$

40. $\sqrt{25 + 9}$

41. $\frac{7 + 6}{2}$

Solve the equation. (*Skills Review Handbook*)

42. $5x + 7 = 9x - 17$

43. $\frac{3 + y}{2} = 6$

44. $\frac{-5 + x}{2} = -9$

45. $-6x - 13 = -x - 23$

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If students need help...

Resources by Chapter
 • Practice A and Practice B
 • Puzzle Time

Student Journal
 • Practice

Differentiating the Lesson
 Skills Review Handbook

If students got it...

Resources by Chapter
 • Enrichment and Extension
 • Cumulative Review

Start the next Section