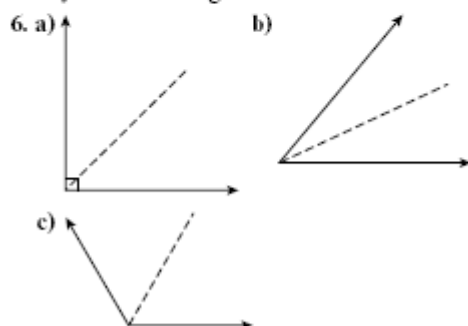


MathLinks 9 Practice and Homework Book

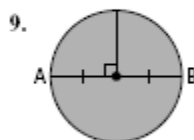
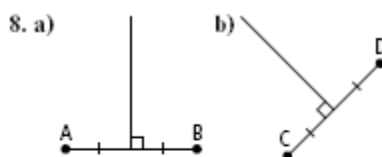
Chapter 10 Answers

10 Get Ready

- a) 2 cm b) 1.5 cm
- a) Examples: 6 cm, 4.5 cm
b) 6.28 cm, 4.71 cm
- a) any estimate between 20° and 30°
b) any estimate between 45° and 60°
c) any estimate between 100° and 110°
- a) 25° b) 48° c) 105°
- Example: I was pretty close but a little large.
My estimated angle was 58° .



7. 45° . Example: It bisects a 90° angle and 45° is half of 90° .

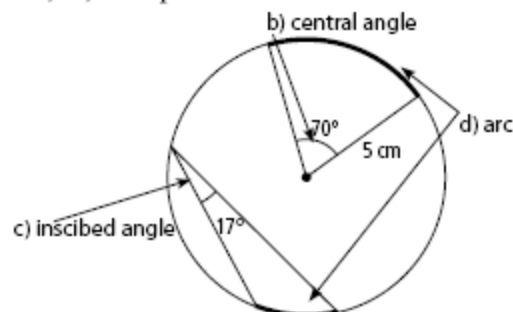


Example: AB is a diameter. Its perpendicular bisector is at the centre of the circle and defines two radii.

10.1 Exploring Angles in a Circle

1. a) arc b) inscribed angle c) subtended

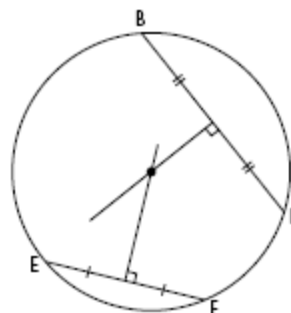
2. a)–d) Example:



3. a) 35° . Example: $\angle FIH$ measures 90° because it is an inscribed angle subtended by the diameter IG, therefore $\angle IHF$ must measure 55° (total of angles in a triangle is 180° and $180 - 35 - 90 = 55$); $\angle GHI$ measures 90° for the same reason as $\angle FIH$, and $\angle GHI - \angle IHF = 35^\circ$ ($90 - 55 = 35$).
- b) central angle. Example: It is formed by FJ and GJ, which are radii of a circle.
- c) 70° . Example: It is a central angle subtended by the same arc as the inscribed $\angle FHG$ of 35° (see answer a) above).
4. a) 90° b) 4 cm 5. a) 60° b) Example: 1 and 7
6. a) 9.5 cm b) 90° c) 8.5 cm
7. a) 106° . Example: $\triangle STR$ is an isosceles triangle because ST and TR are both radii of the circle and therefore equal. $180 - 37 - 37 = 106$
- b) 53° . Example: Since they are subtended by the same arc, inscribed angle $\angle RQS$ must be half the measure of the central angle $\angle RTS$.

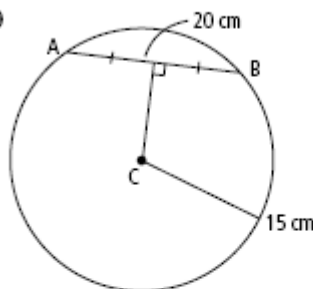
10.2 Exploring Chord Properties

1. a)–c)



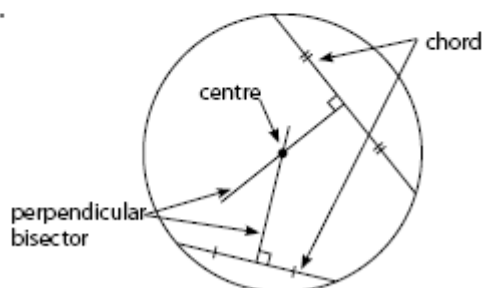
2. a) centre, bisectors, chords
b) bisector, chord, centre
c) centre, bisector, chord
d) centre, chord, bisector

3. a)



b) 11.2 cm

4.



5. a) 14.28 cm b) 5.72 cm c) approximately 3.5 cm

6. 15.28 cm

7. a) Example: Use the rope to create two chords and their perpendicular bisectors; the centre of the circle is where the bisectors meet.

b) approximately 5.3 m

10.3 Tangents to a Circle

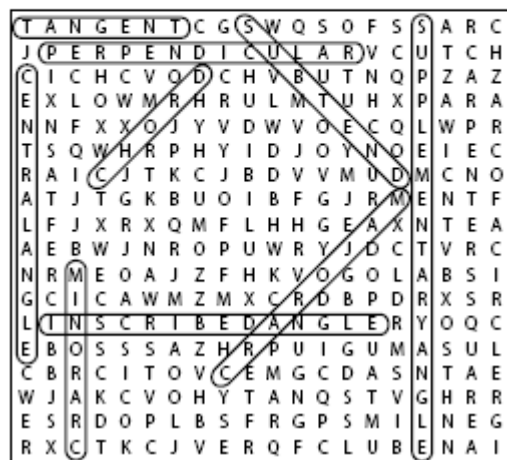
- False. A tangent always touches a circle once.
- False. The place a tangent touches a circle is called the point of tangency.
- True 4. True
- a) 90° . Example: Segment FD is tangent to the circle at point F. FG is a radius. Tangents are perpendicular to the related radius.
b) 30° . Example: $\triangle FDG$ is a right triangle. The sum of angles in a triangle is 180° .
 $180^\circ - 90^\circ - 60^\circ = 30^\circ$
c) 75° . Example: $\triangle FGH$ is an isosceles triangle and $\angle FGH = 30^\circ$, and $(180^\circ - 30^\circ) \div 2 = 75^\circ$
- 73 cm 7. a) 10.8 cm b) 39.5°
- a) 12.03 m
b) Example: Darcy's arm forms the radius of his turning circle. This is half the diameter. When he lets the discus go, it leaves along a tangent to the circle he made.
- 37.5°

10 Chapter Link

- a) 90° b) central 2. a) 45°
- Yes. Example: One side of the $\triangle HED$ is the circle's diameter (chord HD).
- 14.14 m
- a) 2.93 m b) 18.47 m c) 7.66 m
- 22.5° . Example: Since angle $\angle BJD$ measures 90° or twice that of $\angle BGD$ (being the inscribed angle subtended by the same arc), and radius JC bisects the chord resulting in $\angle DJC$ measuring half of $\angle BJD$ or 45° ; $\angle JCD = 180 - \angle DJC \div 2$, or 67.5° ; $\angle JCL = 90^\circ$ because CL is a tangent and GC is the diameter, so $\angle DCL = 90 - \angle JCL$ or 22.5° .

10 Vocabulary Link

- b) 2. a) 3. e) 4. c) 5. i)
- d) 7. g) 8. h) 9. f)



Chapters 1–10 Review

- a) $5 + n$, n = a number added to 5
b) $b - 6$, b = number of bicycles he started with
- a) Example:

Weeks, w	Total Savings, S (\$)
0	27
1	47
2	67
3	87
4	107
5	127

b) $S = 20w + 27$ c) \$667

3. No. Example: The figures are not proportional.

Although the related angles appear to correspond, the related sides are not proportional.

For example, AD is 1.5 cm and EH is 1.0 cm,

but AB is 1.5 cm and EF is 1.1 cm.

4. a) $1\frac{31}{92}$ b) $-\frac{5}{6}$

5. a) Example:



b) 6 c) 6 d) $60^\circ, \frac{1}{6}$

6. 19

7. a) $a = 12$ b) $p = 7$

8. 552 cm^2

9. $\angle a = \angle b = 90^\circ, \angle c = 100^\circ, \angle p = 80^\circ$

10. a) $x < 57$ b) $x \geq -5$ c) $x < 3$

11. a) Yes, because the household could use more

kilowatt hours (extrapolate), or a whole number between the shown values (interpolate).

b) approximately \$260 c) approximately 75 kWh

12. $\angle AED = 90^\circ$, radius = 5 cm