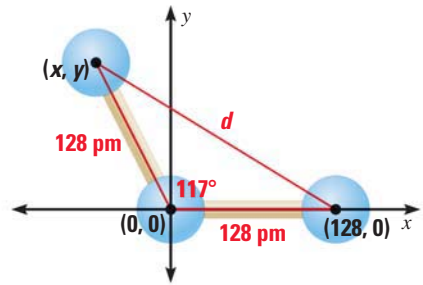


38. **MULTI-STEP PROBLEM** When two atoms in a molecule are bonded to a common atom, chemists are interested in both the bond angle and the lengths of the bonds. An ozone molecule (O_3) is made up of two oxygen atoms bonded to a third oxygen atom, as shown.



- In the diagram, coordinates are given in picometers (pm). (Note: $1 \text{ pm} = 10^{-12} \text{ m}$.) Find the coordinates (x, y) of the center of the oxygen atom in Quadrant II.
- Find the distance d (in picometers) between the centers of the two unbonded oxygen atoms.

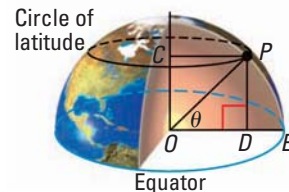
39. **TAKS REASONING** A sprinkler at ground level is used to water a garden. The water leaving the sprinkler has an initial speed of 25 feet per second.

- Calculate** Copy the table below. Use the formula in Example 5 on page 869 to complete the table.

Angle of sprinkler, θ	25°	30°	35°	40°	45°	50°	55°	60°	65°
Horizontal distance water travels, d	?	?	?	?	?	?	?	?	?

- Interpret** What value of θ appears to maximize the horizontal distance traveled by the water? Use the formula for horizontal distance traveled and the unit circle to explain why your answer makes sense.
- Compare** Compare the horizontal distance traveled by the water when $\theta = (45 - k)^\circ$ with the distance when $\theta = (45 + k)^\circ$.

40. **CHALLENGE** The latitude of a point on Earth is the degree measure of the shortest arc from that point to the equator. For example, the latitude of point P in the diagram equals the degree measure of arc PE . At what latitude θ is the circumference of the circle of latitude at P half the distance around the equator?



MIXED REVIEW FOR TAKS

TAKS PRACTICE at classzone.com

REVIEW

Lesson 3.2;
TAKS Workbook

41. **TAKS PRACTICE** Jamal drives 100 miles in 1.75 hours. He averages 70 miles per hour on the highway and 30 miles per hour for the remainder of the trip. About how many hours did he spend driving on the highway? **TAKS Obj. 4**

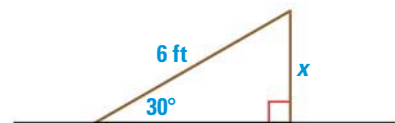
(A) 0.25 h (B) 0.55 h (C) 1.2 h (D) 1.6 h

REVIEW

Lesson 13.1;
TAKS Workbook

42. **TAKS PRACTICE** Jaime builds a bicycle ramp that is 6 feet long and rises at an angle of 30° . What is the value of x , the height of the ramp? **TAKS Obj. 6**

(F) 3 ft (G) $3\sqrt{2}$ ft
(H) $3\sqrt{3}$ ft (J) 12 ft



REVIEW

Lesson 2.3;
TAKS Workbook

43. **TAKS PRACTICE** What are the coordinates of the y -intercept of the graph of the equation $3y = 12 - 2x$? **TAKS Obj. 5**

(A) $(0, -\frac{2}{3})$ (B) (0, 4) (C) (6, 0) (D) (12, 0)

