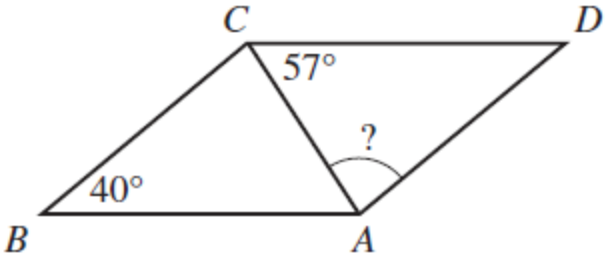
Some Math Problems (Set 1) … SAT or ACT Practice (Geometry)

7. In parallelogram $ABCD$ below, $\overline{AC}$ is a diagonal, the measure of $\angle ABC$ is 40°, and the measure of $\angle ACD$ is 57°. What is the measure of $\angle CAD$?

A. 40°
B. 57°
C. 77°
D. 83°
E. 97°



9. In the standard (x,y) coordinate plane, what is the midpoint of the line segment that has endpoints (3,8) and (1,–4) ?

A. (–2,–12)

B. (–1, –6)

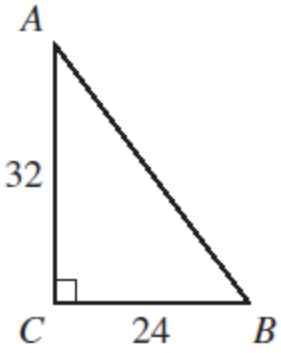
C. $\left(\frac{11}{2},-\frac{3}{2}\right)$

D. (2, 2)

E. (4,–12)

19. The lengths of the 2 legs of right triangle $\triangle ABC$ shown below are given in inches. The midpoint of $\overline{AB}$ is how many inches from A ?

A. 16
B. 20
C. 21
D. 28
E. 40



20. In $\triangle DEF$, the length of $\overline{DE}$ is $\sqrt{30}$ inches, and the length of $\overline{EF}$ is 3 inches. If it can be determined, what is the length, in inches, of $\overline{DF}$?

F. 3
G. $\sqrt{30}$
H. $\sqrt{33}$
J. $\sqrt{39}$
K. Cannot be determined from the given information

26. A circle in the standard (x,y) coordinate plane has center $C(-1,2)$ and passes through $A(2,6)$. Line segment $\overline{AB}$ is a diameter of this circle. What are the coordinates of point B ?

F. $(-6,-2)$
G. $(-5,-1)$
H. $(-4,-2)$
J. $(4, 2)$
K. $(5,10)$

39. A line through the origin and $(10,4)$ is shown in the standard (x,y) coordinate plane below. The acute angle between the line and the positive x-axis has measure θ. What is the value of $\tan\theta$?

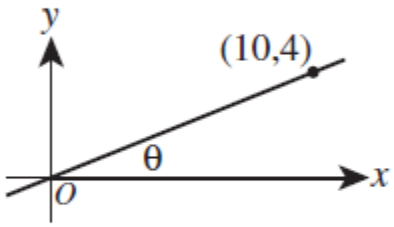
A. $\frac{\sqrt{29}}{2}$

B. $\frac{2}{\sqrt{29}}$

C. $\frac{5}{\sqrt{29}}$

D. $\frac{2}{5}$

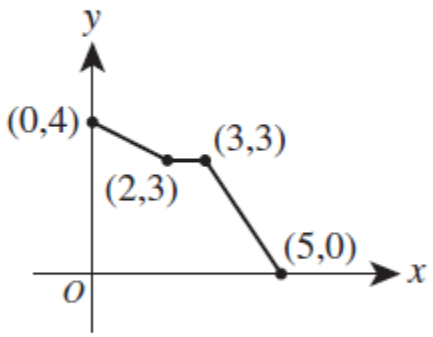
E. $\frac{5}{2}$



46. A box in the shape of a cube has an interior side length of 18 inches and is used to ship a right circular cylinder with a radius of 6 inches and a height of 12 inches. The interior of the box not occupied by the cylinder is filled with packing material. Which of the following numerical expressions gives the number of cubic inches of the box filled with packing material?

F. $6(18)^2 - 2\pi(6)(12) - 2\pi(6)^2$
G. $6(18)^2 - 2\pi(6)(12)$
H. $18^3 - \pi(6)(12)^2$
J. $18^3 - \pi(6)^2(12)$
K. $18^3 - \pi(12)^3$

49. The graph of a function $y = f(x)$ consists of 3 line segments. The graph and the coordinates of the endpoints of the 3 line segments are shown in the standard (x,y) coordinate plane below. What is the area, in square coordinate units, of the region bounded by the graph of $y = f(x)$, the positive y-axis, and the positive x-axis?



A. 10
B. 13
C. 14
D. 15
E. 20