Name: _Key_____ Date: _____

Arc Length Homework

Find the length of $\overarc{AB}$.

1)

$\frac{90}{360} 2\pi(15)$

$\frac{15\pi}{2}$ or 23.56 ft

2)

$\frac{40}{360} 2\pi(6)$
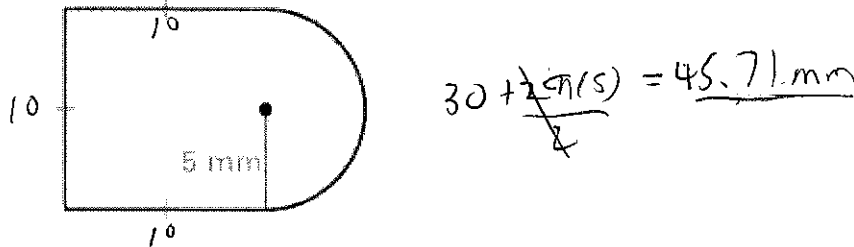
$\frac{4}{3}\pi$ or 4.19 m.
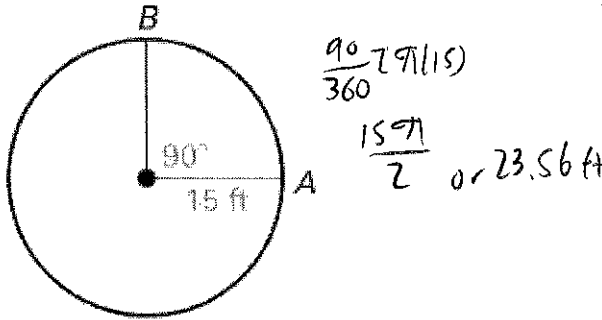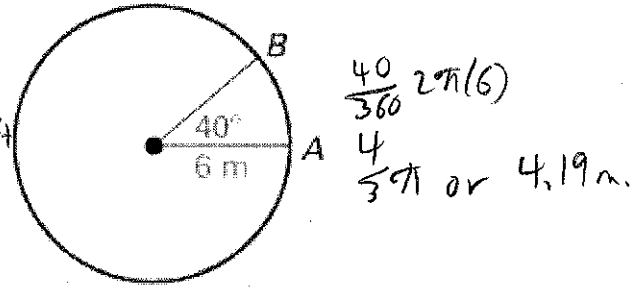
3) Find the length of $\overarc{FG}$.

$\frac{80°}{360} 2\pi(7) = \frac{28\pi}{9}$ or 9.77 m

4) Find the length of $\overarc{EHG}$.

$\frac{200}{360} 2\pi(7) = \frac{70\pi}{9}$ or 24.43 m
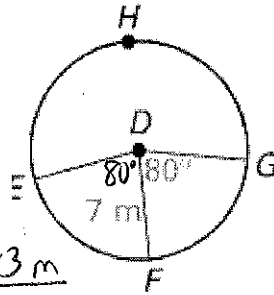
5) Find the perimeter.

$30 + \frac{1}{2}\pi(5) = 45.71$ mm

6) Convert the following degree measures to radians.

a) $30°\left(\frac{\pi}{180}\right) = \frac{\pi}{6}$ b) $60°\left(\frac{\pi}{180}\right) = \frac{\pi}{3}$ c) $210°\left(\frac{\pi}{180}\right) = \frac{7\pi}{6}$

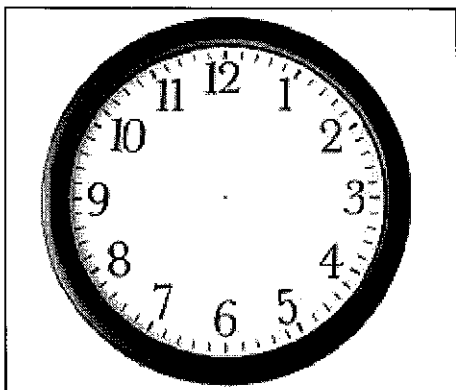7) Convert the following radian measure to degree measures.

b) $\frac{2\pi}{3}\left(\frac{180}{\pi}\right) = 120°$ b) $\frac{3\pi}{4}\left(\frac{180}{\pi}\right) = 135°$ c) $\frac{\pi}{6}\left(\frac{180}{\pi}\right) = 30°$

Word Problems:

8) Mrs.Noonan ran 4 times around a circular track that has a radius of 40 meters. What's the total distance she ran?

$$4 \times 2\pi(40) = 320\pi = 1,005.31 \text{ m}.$$

For questions 9 – 10, use the clock below.

9) How many degrees does the minute hand move in 30 minutes? 40 minutes? 60 minutes?

$180°$

$240°$ $360°$

10) If the minute hand is 4 inches long, what is the arc length covered by the minute hand in 40 minutes?

$$\frac{240°}{360°} \quad 2\pi(4) = 16.76 \text{ in}$$

11) A pie is cut into 6 equal pieces. The arc length of 1 piece of pie is 5.4 cm. What is the diameter of the pie?

$$5.4 \text{ cm} \times 6 = 32.4 \text{ cm}$$

$$32.4 = \pi d$$

$$10.31 \text{ cm} = d$$