

Quiz 5

Key

Part A: [2] True/False. Circle T if the statement is *always* true, otherwise circle F. No partial credit is given.

F The perimeter of a circle is called the circumference.

T F The perimeter of a circle with radius r is πr^2 .

T F There are 100 meters in 1 centimeter.

F The distance between any two points is greater than or equal to 0.

Part B: Show *all* your work on the following. A right answer with no supporting work will receive no credit.

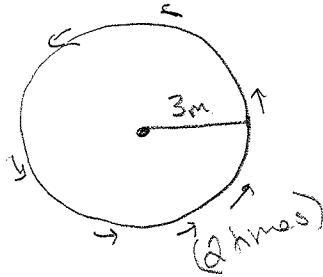
1. [3] A cheetah is clocked at 60 miles per hour (mph), what is its speed in feet per second? (Note: there are 5280 feet in 1 mile.)

$$\frac{60 \text{ miles}}{\text{hr}} \cdot \frac{1 \text{ hr}}{60 \text{ min}} \cdot \frac{1 \text{ min}}{60 \text{ sec}} \cdot \frac{5280 \text{ ft}}{1 \text{ mile}} = \frac{5280 \text{ ft}}{60 \text{ sec}} = 88 \text{ ft/sec}$$

$$\begin{array}{r} 88 \\ 60 \overline{) 5280} \\ \underline{-48} \\ 48 \end{array}$$

2. On a circular merry-go-round, a brown horse is 3 meters from the center and a black horse is 6 meters from the center. The merry-go-round makes 2 revolutions per minute.

(a) [1] Describe the path that the brown horse travels in one minute.



The brown horse circles the center of the merry-go-round 2 times with a radius of 3 meters.

(b) [2] How many meters does the brown horse travel in a minute?

The circumference of the above circle twice (b/c the horse goes around twice).

$$\begin{aligned} \text{So } & 2 \cdot (\text{circumference of circle in } \# \text{ 2a}) \\ & = 2 \cdot (2\pi \cdot 3\text{m}) \\ & = 12\pi \text{ m.} \\ & \text{about } 38 \text{ meters} \end{aligned}$$

(c) [2] Are the horses both traveling at the the same speed?

nope, the brown horse is traveling $37 \frac{\text{m}}{\text{min}}$ but the black horse is traveling $2(\text{circumference of a larger circle})$ or $2 \cdot 2\pi \cdot 6 \approx 75 \text{ meters/min.}$

$$\begin{array}{r} 3.14 \\ \times 12 \\ \hline 628 \\ 3140 \\ \hline 37.68 \end{array}$$

$$\begin{array}{r} 3.14 \\ \times 24 \\ \hline 1256 \\ 6280 \\ \hline 75.36 \end{array}$$