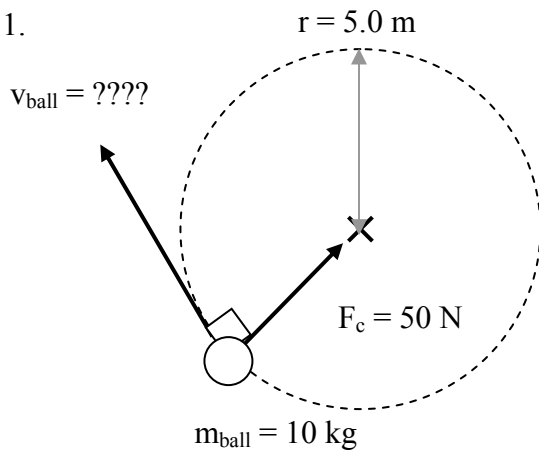# Basic Horizontal Circles – Key

Find the missing values for these horizontal circles.   Assume speeds are constant.

1.

$r = 5.0$ m

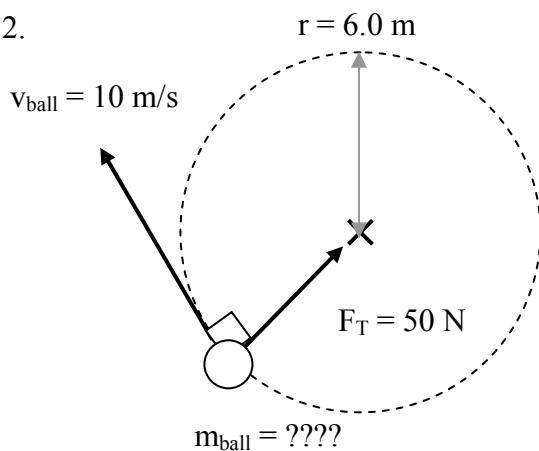$v_{ball} = ????$

$F_c = 50$ N

$m_{ball} = 10$ kg

Find the following:

Speed (m/s) = 5 m/s

Circumference (m) = 31.4 m

Period (s) = 6.28 sec

Frequency (Hz) = 0.16 Hz

2.

$r = 6.0$ m

$v_{ball} = 10$ m/s
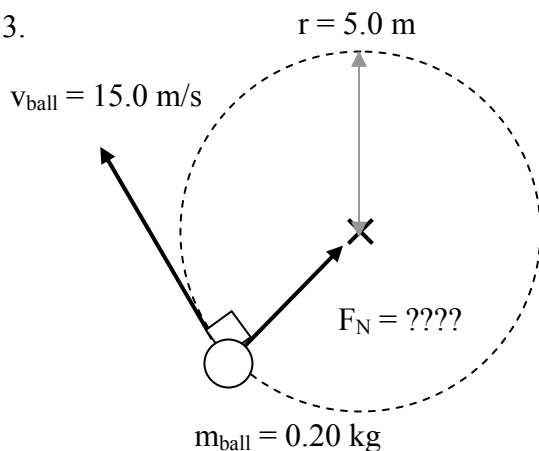
$F_T = 50$ N

$m_{ball} = ????$

Find the following:

Mass (kg) = 3 kg

Circumference (m) = 37.7 m

Period (s) = 3.77 s

3.

$r = 5.0$ m

$v_{ball} = 15.0$ m/s

$F_N = ????$

$m_{ball} = 0.20$ kg

Find the following:

Normal Force (N) = 9 N

Circumference (m) = 31.4 m

Frequency (Hz) = 0.48 Hz

4.

r = ????

v_{ball} = 10 cm/s

F_N = 5.0 N

m_{ball} = 100 g
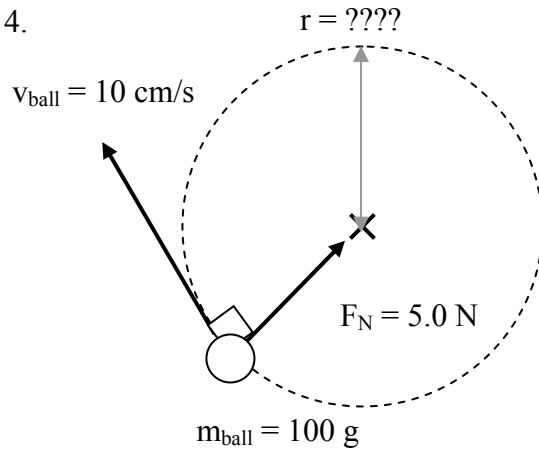
Find the following:

Radius (m) = 0.0002 m

Circumference (m) = 0.00126 m

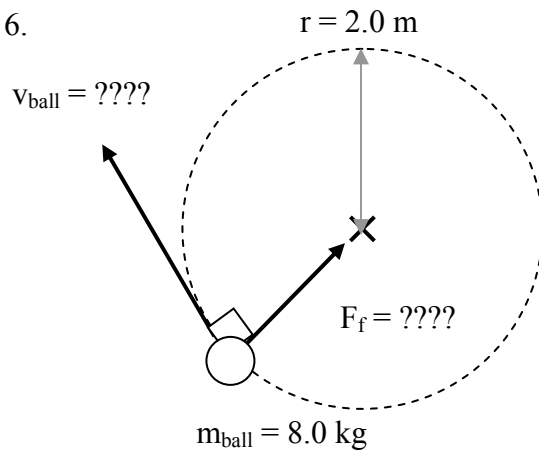Frequency (Hz) = 79.6 Hz

5.

r = 2.5 m

v_{ball} = ????

F_T = ????

m_{ball} = 10 kg
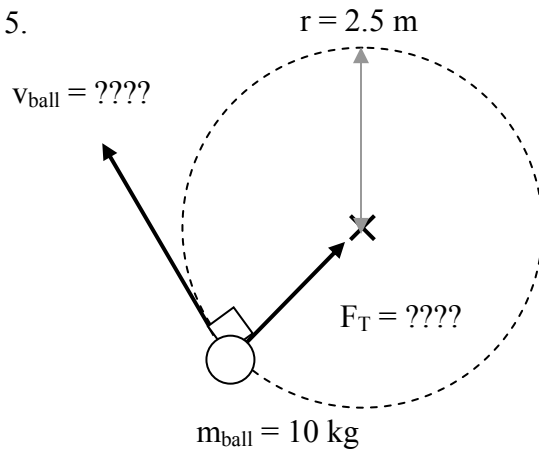
Find the following if the period is 3.14 s.

Circumference (m) = 15.7 m

Speed (m/s) = 5 m/s

Tension (N) = 100 N

6.

r = 2.0 m

v_{ball} = ????

F_f = ????

m_{ball} = 8.0 kg

Find the following if the frequency is 4.0 Hz.

Circumference (m) = 12.6 m

Speed (m/s) = 50.27 m/s

Fricton (N) = 10106 N

Coefficient of friction = 126.3