g's measure acceleration

not force!

$$1\ g = 10\ m/s^2$$

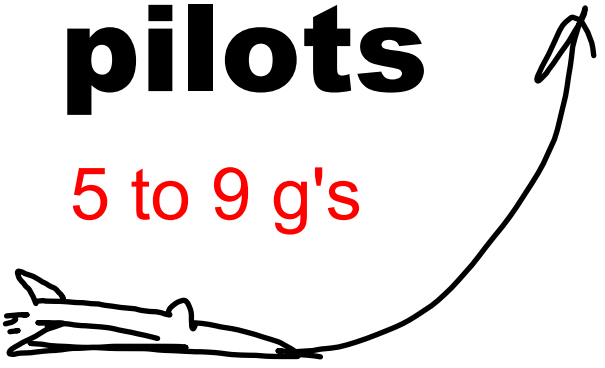
Centripetal Acceleration Equation

$$a_c = \frac{v_T^2}{r}$$

(Then divide by 10 if you want to convert to g's)

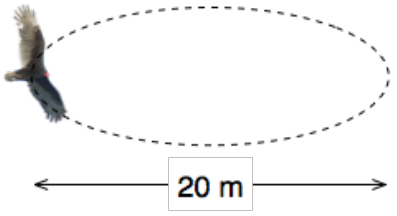
pilots

5 to 9 g's



coasters

3 to 5 g's

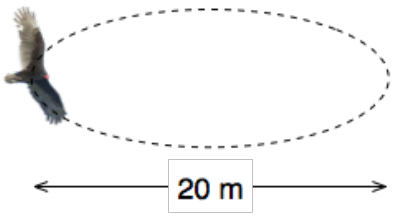


The vulture is circling once every 10 seconds.
The diameter of the circle is 20 meters.

a) What is the vulture's angular velocity?

b) What is vulture's tangential velocity?

c) What is vulture's centripetal acceleration?



The vulture is circling once every 10 seconds.
The diameter of the circle is 20 meters.

a) What is the vulture's angular velocity?

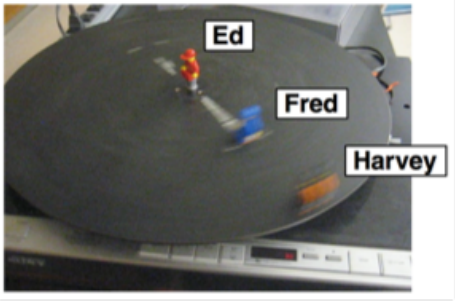
$$\text{ang v} = \frac{\text{angle}}{\text{time}} = \frac{2\pi \text{ radians}}{10 \text{ s}} = \frac{\pi}{5} \text{ rad/s}$$

b) What is vulture's tangential velocity?

$$V_T = (\text{ang v})(\text{radius}) = \left(\frac{\pi}{5}\right)(10 \text{ m}) = 6.28 \text{ m/s}$$

c) What is vulture's centripetal acceleration?

$$a_C = \frac{V_T^2}{r} = \frac{(6.28)^2}{(10)} = 3.95 \text{ m/s}^2$$



Ed, Fred and Harvey are spinning 3 times every 2 seconds. Harvey is 0.3 m from Ed.

a) What is Harvey's angular velocity?

b) What is Harvey's tangential velocity?

c) What is Harvey's centripetal acceleration? (How many g's is that?)

d) What are the answers to a, b & c for Ed? (No new calculations required.)

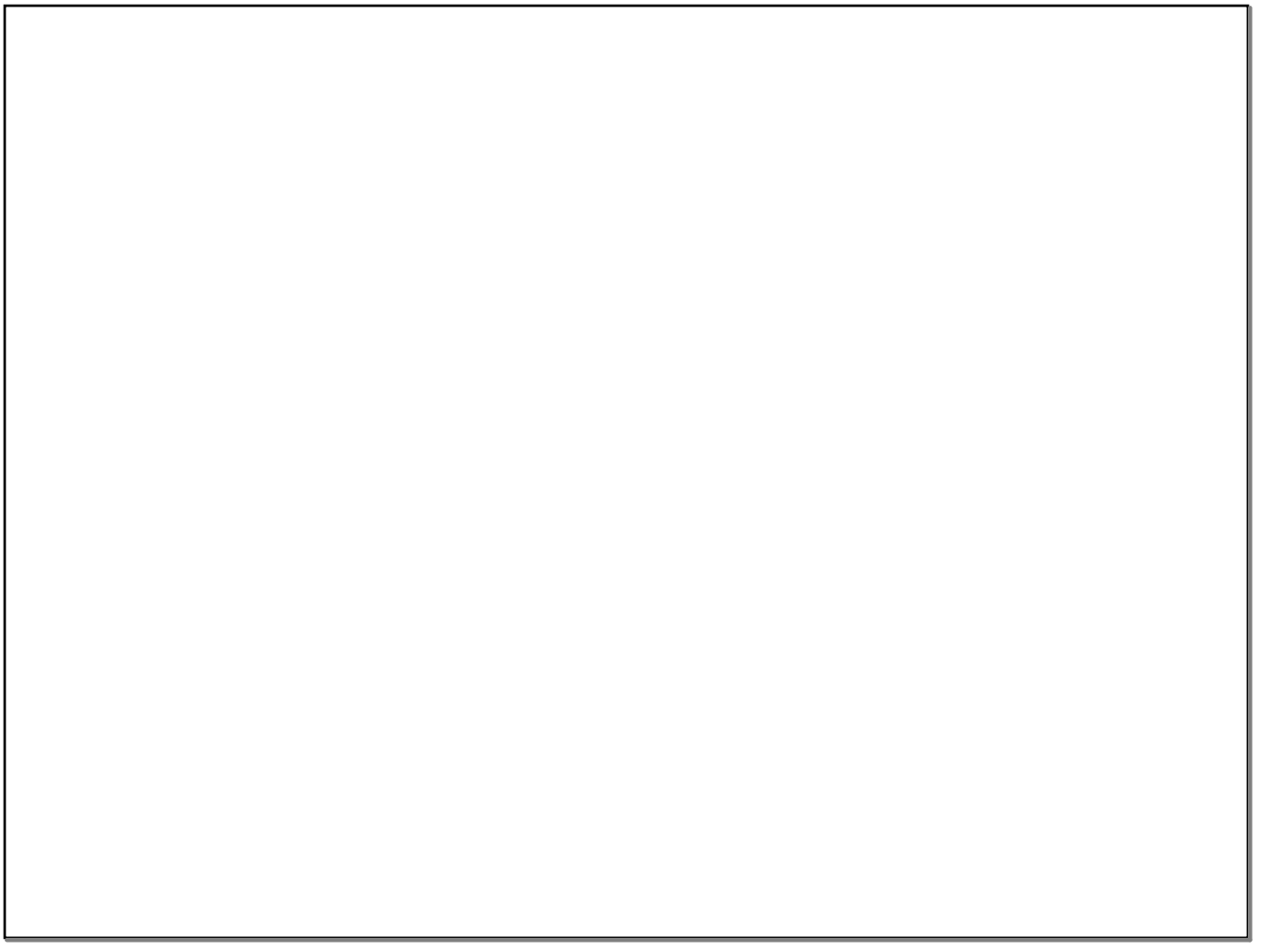
Try it!

see if you get:

a) 3π rad/s

b) 2.83 m/s

c) 26.6 m/s^2

(2.66 g's)

d)