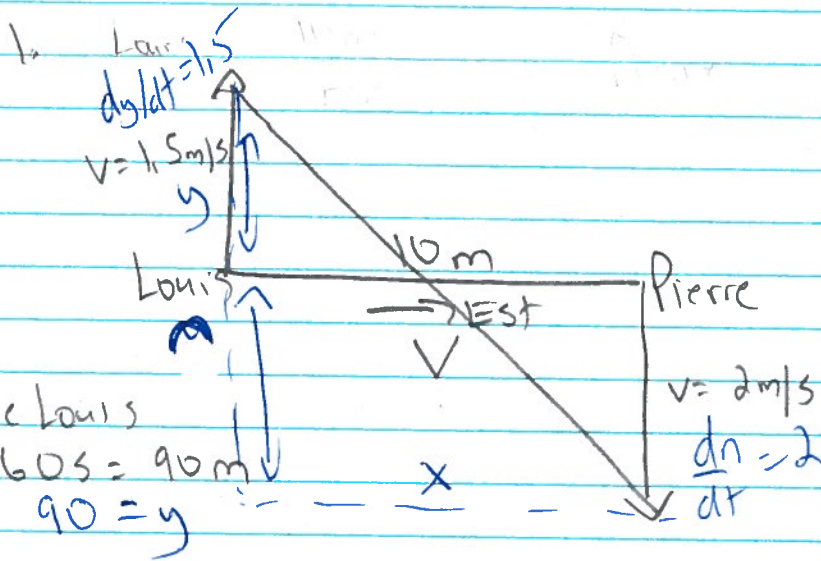


# Mini Quiz Les Taux



vitesse au bout  
d'une minute ?

$$1 \text{ minute} = 60 \text{ sec}$$

distance Loui

$$d = 1.5 \cdot 60 \text{ s} = 90 \text{ m}$$

$$90 = y$$

distance Pierre

$$d = 2 \text{ m/s} \cdot 60 \text{ s} = 120 \text{ m}$$

$$120 = n$$

$$x^2 + (y+n)^2 = v^2$$

$$x^2 + (y+n)^2 = v^2$$

$$10^2 + (90+120)^2 = v^2$$

$$10^2 + (y+n)^2 = v^2$$

$$\sqrt{44200} = \sqrt{v^2}$$

$$0 + 2(y+n) \left( \frac{dy}{dt} + \frac{dn}{dt} \right) = \frac{dv}{dt}$$

$$\sqrt{44200} = v$$

$$\frac{(90+120)(1.5+2)}{\sqrt{44200}} = \frac{dv}{dt}$$

$$\frac{dv}{dt} = \frac{735}{\sqrt{44200}}$$

$$\frac{dv}{dt} = 3.496 \text{ m/s}$$

$x = \# \text{ bâtons}$

2. taux de variation  $\rightarrow$  pente  $\rightarrow \frac{dC}{dt} = ? \text{ \$/jour}$   
de son coût de production

$$C = 200 + 8x + \frac{x^2}{30}$$

$$\frac{dC}{dx} = 8 + \frac{2x}{30}$$

$$\frac{dC}{dx} = 8 + \frac{x}{15} = \text{\$/bâtons}$$

$$\frac{dx}{dt} = 10 \text{ bâtons par jour}$$

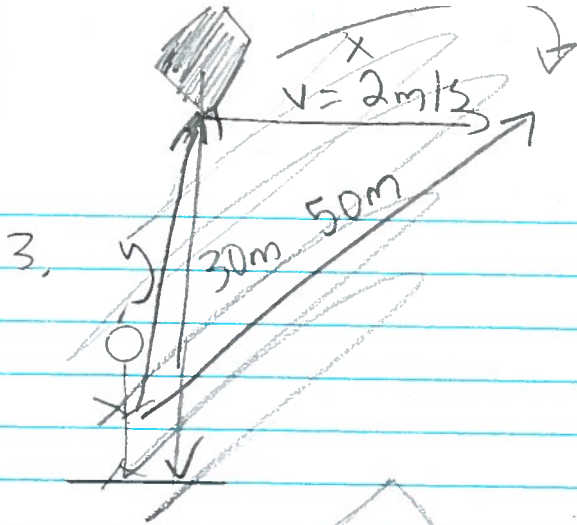
$$x = 300 \text{ bâtons}$$

$$\frac{dC}{dx} \cdot \frac{dx}{dt} = \frac{dC}{dt}$$

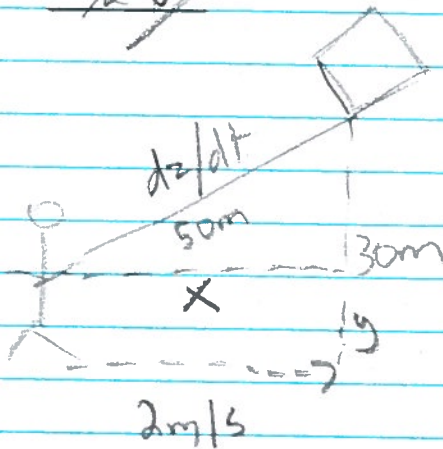
$$\left(8 + \frac{x}{15}\right) \cdot 10 = \frac{dC}{dt}$$

$$\left(8 + \frac{300}{15}\right) \cdot 10$$

$$\boxed{280 \text{ \$/jour} = \frac{dC}{dt}}$$



$$\frac{dx}{dt} = 2$$



$$(30-y)^2 + x^2 = z^2$$

$$-2(30-y)\frac{dy}{dt} + 2x\frac{dx}{dt} = 2z\frac{dz}{dt}$$

$$-(30-y) \cdot 0 + x \cdot 2 = 50 \cdot \frac{dz}{dt}$$

$$\frac{40 \cdot 2}{50} = \frac{dz}{dt}$$

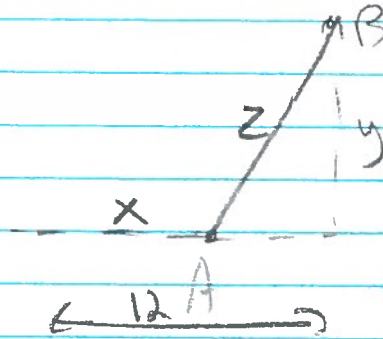
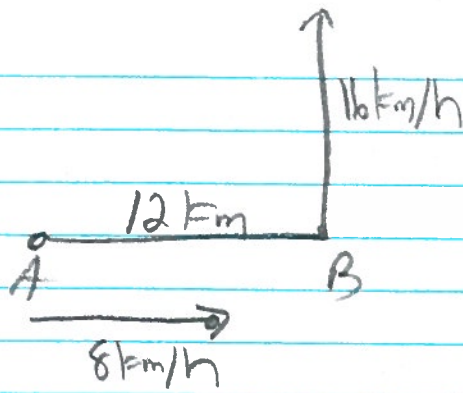
$$1.6 \text{ m/s} = \frac{dz}{dt}$$

$$50^2 - 30^2 = x^2$$

$$\sqrt{1600} = x$$

$$40 = x$$

4



45 min.  
= 0.75 hours

$$\frac{dx}{dt} = 8 \text{ km/h}$$

$$\frac{dy}{dt} = 16 \text{ km/h}$$

$$\frac{dz}{dt} = ?$$

(unknown)

$$d = \frac{8 \text{ km/h}}{h} \cdot 0.75 h$$

$$dv = 16 \text{ km/h} \cdot 0.75$$

$$x = \text{dist hor.} = 6 \text{ km}$$

$$\text{dist vert} = 12 \text{ km}$$

$$(12-x)^2 + y^2 = z^2$$

$$(12-x)^2 + y^2 = z^2$$

$$(12-6)^2 + 12^2 = z^2$$

$$36 + 144 = z^2$$

$$z = \sqrt{180}$$

$$2(12-x) \cdot (-1) \frac{dx}{dt} + 2y \frac{dy}{dt} = 2z \frac{dz}{dt}$$

$$-2(12-x) \frac{dx}{dt} + 2y \frac{dy}{dt} = 2z \frac{dz}{dt}$$

$$-(12-x) \frac{dx}{dt} + y \frac{dy}{dt} = z \frac{dz}{dt}$$

$$-\frac{(12-6) \cdot 8 + 12 \cdot 16}{\sqrt{180}} = \frac{dz}{dt}$$

$$\frac{-48 + 192}{\sqrt{180}} = \frac{dz}{dt}$$

$$\boxed{\frac{dz}{dt} = 10.7 \text{ km/h}}$$