

a)

A machine can dig, on average, 2 cm of tunnel each minute.  
It operates 24 hours of each day.

Work out how many days it should take to dig a tunnel of length 3.5km?  
Give your answer to the nearest day.

How far can the tunnel dig in a day?	$\begin{aligned} &2 \text{ cm per minute} \\ &2 \text{ cm} \times 60 = 120 \text{ cm per hour} \\ &120 \text{ cm} \times 24 = 2880 \text{ cm per day} \\ &28.8 \text{ m per day} \end{aligned}$
How long would it take to dig the tunnel?	$\begin{aligned} &3.5 \text{ km} = 3500 \text{ m} \\ &\frac{3500}{28.8} = 121.527 \end{aligned}$
What is this to the nearest day?	122 days

b)

A machine can dig, on average, 3 cm of tunnel each minute.  
It operates 18 hours of each day.

Work out how many days it should take to dig a tunnel of length 6.4km?  
Give your answer to the nearest day.

How far can the tunnel dig in a day?	$\begin{aligned} &3 \text{ cm per minute} \\ &3 \text{ cm} \times 60 = 180 \text{ cm per hour} \\ &180 \text{ cm} \times 18 = 3240 \text{ cm per day} \\ &32.4 \text{ m per day} \end{aligned}$
How long would it take to dig the tunnel?	$\begin{aligned} &6.4 \text{ km} = 6400 \text{ m} \\ &\frac{6400}{32.4} = 197.530864198 \end{aligned}$
What is this to the nearest day?	

c)

A machine can dig, on average, 2.5 cm of tunnel each minute.  
It operates 20 hours of each day.

Work out how many days it should take to dig a tunnel of length 5km?  
Give your answer to the nearest day.

How far can the tunnel dig in a day?	2.5 cm per minute $2.5 \text{ cm} \times 60 = 150 \text{ cm per hour}$ $150 \text{ cm} \times 20 = 3000 \text{ cm per day}$  30 m per day
How long would it take to dig the tunnel?	
What is this to the nearest day?	

d)

A machine can dig, on average, 1.2 cm of tunnel each minute.  
It operates 24 hours of each day.

Work out how many days it should take to dig a tunnel of length 1.8 km?  
Give your answer to the nearest day.