

Year 11 : Numeracy Mock Prep

Paper 1 : No Calculator

- i) £720 was Jack's share of an amount of money which had been split between Jane, Jack and Paula in the ratio $7:9:2$.
How much did Jane get?
How much did Paula get?
- 2) £4000 is invested in a bank for 3 years. The bank pays 10% p.a. compound interest.
Calculate the value of the investment after the 3 years.
- 3) A field is in the shape of a rectangle. The field has a fence erected around it.
- The length of the field is $3 \times$ as much as the width.
 - The perimeter of the field is 400m. ie 400m of fencing is needed.
- Find the length and width of the field.
(Hint : set up an equation first)

4) Here are a sequence of pictures made from matchsticks

$$\begin{array}{c} \text{---} \\ | \\ \text{---} \\ | \\ \text{---} \\ | \\ \text{---} \\ | \\ \text{---} \end{array}$$

$N=1$
 $m=4$

$$\begin{array}{c} \text{---} \text{---} \\ | \text{---} \text{---} \\ | \text{---} \text{---} \\ | \text{---} \text{---} \\ | \text{---} \text{---} \end{array}$$

$N=2$
 $m=7$

$$\begin{array}{c} \text{---} \text{---} \text{---} \\ | \text{---} \text{---} \text{---} \\ | \text{---} \text{---} \text{---} \\ | \text{---} \text{---} \text{---} \\ | \text{---} \text{---} \text{---} \end{array}$$

$N=3$
 $m=10$

$N=$
 $m=$

a) Draw the next picture in the space provided.

b) Complete the results table for picture number N and number of matchsticks m

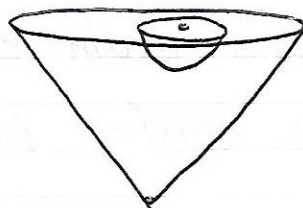
N	1	2	3	4	5
m					

c) Find a formula linking N and m

d) Use the formula to find how many matches for $N=20$

e) Use the formula to find which picture number uses 151 matches

5) The diagram shows a cone which has a hemispherical hole cut out from the end (upper circular face).



- The radius of the cone is 10cm
- The height of the cone is also 10cm
- The radius of the hemisphere is 3cm

a) Show the volume that remains after the hole is removed is $\frac{946}{3} \pi \text{ cm}^3$.

b) The top face after the hole is removed is to be painted, but not inside the hole. Calculate the area to be painted. Leave π in your answer.