FIRST FORMS MATHEMATICS P.ST.HILL

2006 140 copies

$1\frac{1}{4}$ HOURS

Answer **ALL** questions. All necessary working **MUST** be shown.

1. (a) What is the value of the 1 in 20.081 ?

   (b) Convert $110100_2$ to base 10.

2. (a) Add together 8.23, 6.75 and 5.002. Give your answer to 3 significant figures

   (b) Divide 1.935 by 0.9. Give your answer to one decimal place.

3. (a) (i) Express 32, 40 and 56 as products of their prime factors.

   (ii) Hence, find the HCF of 32, 40 and 56.

   (b) What is the smallest number of sweets that can be shared exactly between 8, 10 or 18 persons?

4. If U = { even numbers between 1 and 21} , P = {factors of 32} and Q = { multiples of 4 which are less than (but not equal to) 24}

   (i) List the members of P and Q

   (ii) Draw a venn diagram to represent the information given.

   (iii) Find $n(P \cup Q)$

5. (a) Express $\frac{25}{40}$ as a decimal.

   (b) There are 40 shops at a Mall, of which 65% sell clothes. How many shops do not sell clothes?

6. An alloy (i.e. a mixture of metals) consists of 4 parts gold and 9 parts copper. How many grammes of the gold should be mixed with 360 grammes of copper?

7. Solve the following equation for x

(a) $5x = 62$

(b) $3x + 15 = 27$

(c) $19 = 16x - 29$

8. (i) A car is travelling at 60 km/h. How far does it go in one minute?

(ii) How many fish can be stocked in an aquarium 90 cm long, 40 cm wide and 50 cm deep, if each fish requires 4500 $cm^3$ of water?

9. If $x = -3$, $y = 2$ and $z = 5$, find the value of each of the following expressions:

(i) $2x + 3y$

(ii) $yz - x$

(iii) $320 \div 4z$

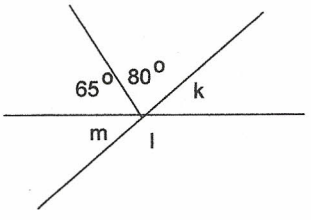
10. Simplify the following:

(i) $26x \div 13$

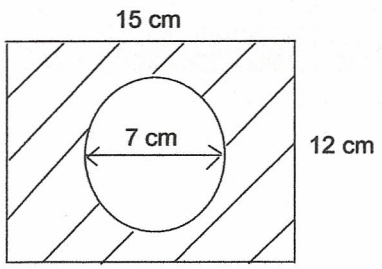
(ii) $5p + 2q - 3p - 4q$

(iii) $3x \times 4xy$

11. Find the sizes of angles k, l and m in the diagram below:



12. The end face of a metal beam, 15 cm wide, 12 cm deep with a circular hole of diameter 7 cm, is as shown in the diagram below.




(a) Find the area of the end face. Use $\pi = \frac{22}{7}$

(b) Find the volume of metal in $cm^3$ used to make a 5 m length of a beam with an end face as described above.

END OF EXAMINATION