Maths

13+ ENTRY INTO YEAR 9 ENTRANCE EXAM

2012

Name: _____

There are 60 marks available.

Calculators are NOT allowed.

Write all answers, including your workings, in this booklet.

Time allowed: 1 hour

1. You can buy a new calculator for £1.25. In 1979 the same calculator cost 22 times as much as it costs now.

How much did it cost in 1979?

[2]

2. **a)** A bag has 20 cubes in it. 6 of the cubes are green. You take a cube at random and put it back in the bag. What is the probability that the cube is NOT GREEN?

[1]

b) I now add 4 more green cubes to the bag. What is the probability that I take out a green cube?

[2]

3. Calculate 57.3×2.1.

You must show working.

[2]

4. The diagram shows four different sized barrels.

Barrel **A** holds **54 gallons**	Barrel **B** holds **36 gallons**	Barrel **C** holds **18 gallons**	Barrel **D** holds **9 gallons**

Write the missing fractions **as simply as possible**. The first one is done for you.

Barrel **C** holds $\dfrac{1}{2}$ .... of the amount barrel **B** holds.

Barrel **D** holds .... of the amount barrel **B** holds.

Barrel **C** holds .... of the amount barrel **A** holds.

Barrel **B** holds .... of the amount barrel **A** holds.

[3]

5. A fruit drink is made by mixing the following quantities:

Orange $\frac{1}{2}$ litre

Cranberry $\frac{1}{3}$ litre

Grape $\frac{1}{6}$ litre

How much of each type of juice is needed to make $1\frac{1}{2}$ litre of the same drink?

[2]

6. Put these numbers in order, smallest first: $\frac{1}{4}$ 0.8 $\frac{3}{20}$

[2]

7. Work out the following.

a) $\frac{3}{10} \times \frac{5}{7}$

b) $\frac{5}{8} + \frac{3}{4}$

c) $1\frac{1}{3} - \frac{1}{5}$

d) $\frac{3}{5} \div \frac{4}{10}$

[8]

8. a) How many quarters are there in $1\frac{1}{4}$

b) How many tenths in $3\frac{3}{10}$

c) How many tenths in $3\frac{3}{5}$

[3]

9. Calculate the following:

1.5×1000 ....

$150 \div 0.1$ ....

$0.15 \div 0.01$ ....

15×0.001 ....

[4]

10. Look at the list of numbers here:

-7   -5   -3   -1   0   2   4   6

a) Which three numbers when added together will make the **lowest** possible total? You must not use the same number twice, and you must give the total.

………. + …………. + ………….. = …………….

[2]

b) Which two numbers when multiplied together will give the **biggest** possible total?

………….. × ……………… = ……………..

[2]

11. A car travels at 24 km/hour. How far does it travel in 45 minutes? Give your answer in km.

[2]

12. Anna, Bertie and Chris split £240 between them in the ratio 1:2:3. How much does each get?

Explain why they cannot split the money exactly if they use the ratios 2:2:3?

[3]

13. **a**)   What is the volume of a cube with side length 5cm?

[1]

b)   This cube is 12cm long, 4cm wide and 4cm high. What is the surface area?

4cm

12cm

4cm
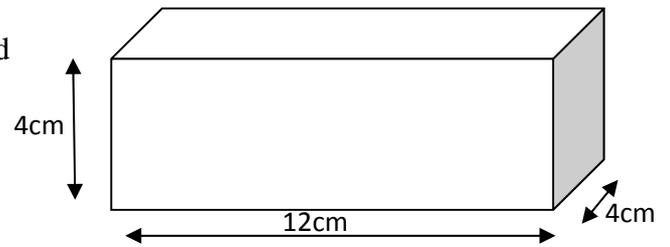
[3]

14.   Multiply out and simplify these expressions:

$7 + 2t + 3t$

[1]

$3(x - 2) - 2 (4 - 3x)$

[2]

$3m - (- m)$

[1]

15. The diagram shows triangle PQR.

Work out the sizes of angles *a*, *b* and *c*

a = ………………°   *b* = ………………°

c = ………………°

R

30º
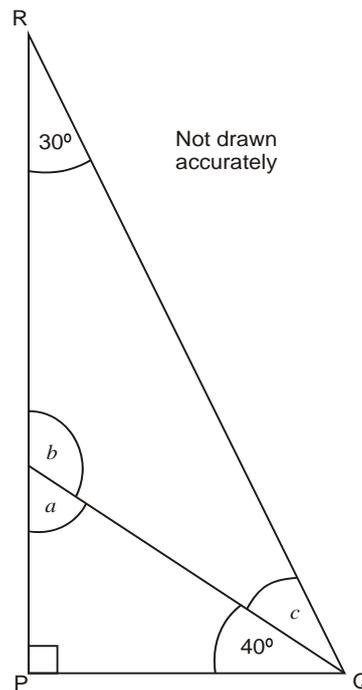
Not drawn
accurately

b

a

c

40º

P   Q

[3]

16. Solve these equations.

a) $7k - 1 = 20$

[1]

b) $3(m + 1) = 60$

[2]

c) $8t - 3 = 2t + 1$

[2]

d) $\dfrac{3x}{5} = 12$

[2]

17. **a)** Find values of k and m to satisfy these statements:

$4^k = 64$ $\qquad\qquad$ $2^m = 64$

k = ……………………

m = …………………..

[2]

b) Which of these numbers is not a square number? Explain your reasoning:

3^4 $\qquad$ 4^5 $\qquad$ 4^8 $\qquad$ 5^4

[2]

END OF TEST