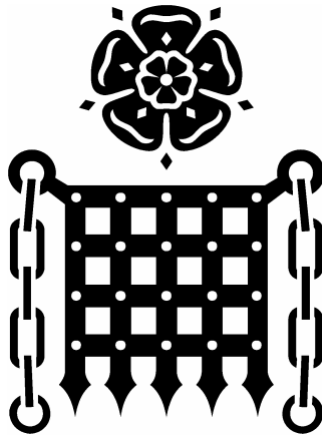# EMANUEL SCHOOL

# Mathematics

# 13+ SAMPLE PAPER

## Non-Calculator

## 1 hour

**Information for pupils**

Answer all questions showing your working clearly

1. Work out the following

(a) 42 x  13                    (b) 56.23 + 87.1497

(c) 8.4 - 2.481                 (d) 0.24 $\div$ 0.08
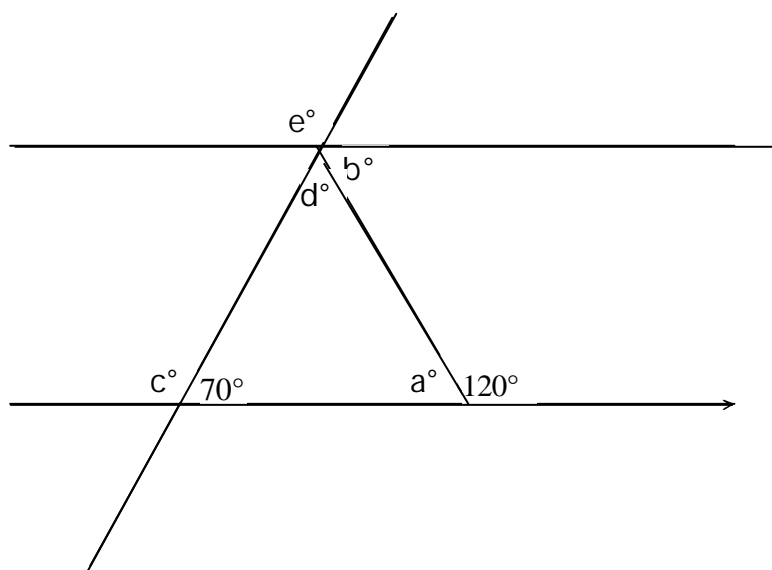
2. Calculate:

a) $\dfrac{1}{5} + \dfrac{3}{4}$

b) $1\dfrac{2}{3} - \dfrac{3}{7}$

c) $\dfrac{3}{7} \times \dfrac{28}{33}$

3.      Find the size of the angles marked with a letter:



a =

b =

c =

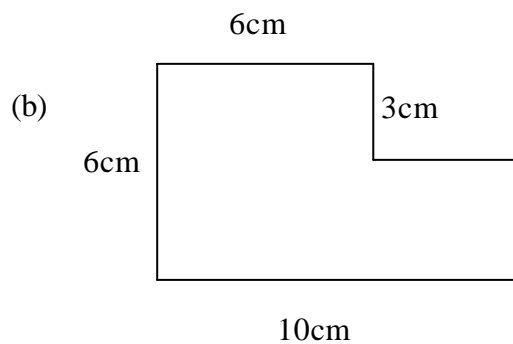d =

e =

4. Find $\dfrac{2}{5}$ of 45

5. If S = a(b + c), find S when a = 3, b = 4, c = 5

6. Find the mean of 45, 23, 89, 12,  33

7. Complete the table below showing your working clearly underneath. Write the fractions in their <u>lowest terms</u>.

| Fraction | Decimal | Percentage |
|---|---|---|
|  | 0.25 |  |
|  | 0.6 |  |
|  |  | 5% |
| $\dfrac{7}{25}$ |  |  |

8.      Find the area of the shape below

(b)

6cm

3cm

6cm

10cm

Area = _____

9. Find the value of

a) $2^3$

b) $5.3 \times 10^2$

10. Write as a single expression in index form

a) $2^2 \times 2^4$

b) $\dfrac{4^6}{4^4}$

11. A number is chosen at random from the first 12 positive numbers. What is the probability that it is a prime number?

12. Round each number to the accuracy given in brackets

a) 24.79 (2.s.f.)

b) 23.55 (1.d.p.)

c) 399 (1.s.f)

13. In a class of 30 pupils, 60% have school dinners and the rest have a packed lunch. How many pupils:

    a) have a school dinner.
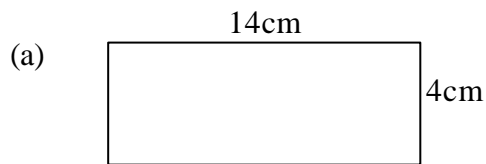
    b) have a packed lunch.
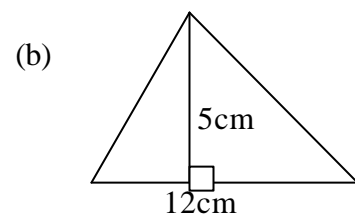
14. Simplify

a) $5y \times 3y$

b) $7(2x - 3)$

c) $5 - (x + 3)$

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

15.   Calculate the area of each shape

(a)

14cm

4cm

Area = _____

(b)

5cm

12cm

Area = _____

16. Write down the next two numbers in each pattern:

(a)  10.5, 8, 5.5, 3 ,_____, _____        (b)   14, 11, 7, 2, ,_____,

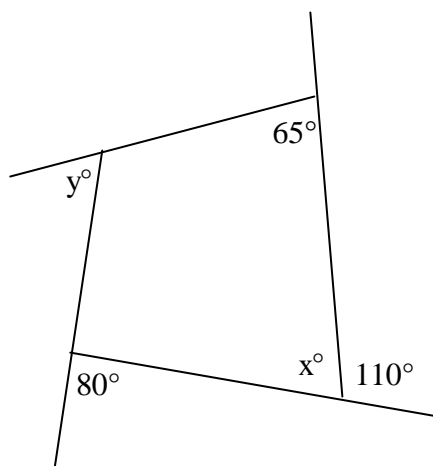(c)  -17.5,-13,- 8.5,- 4,_____, ____        (d) -17,-12, - 8, –5, _____, _____,

17. Divide £24 into the ratio 3 : 5

18.  In class 7B, $\frac{3}{4}$ of the pupils support United, $\frac{2}{9}$ of the pupils support City and the rest support Rovers. There are 36 pupils in class 7B.

**(a)**  How many pupils support United?

**(b)**  How many pupils support Rovers?

19. Find the size of the marked angles.



x° = _____

y° = _____

20.     A letter is chosen from the word

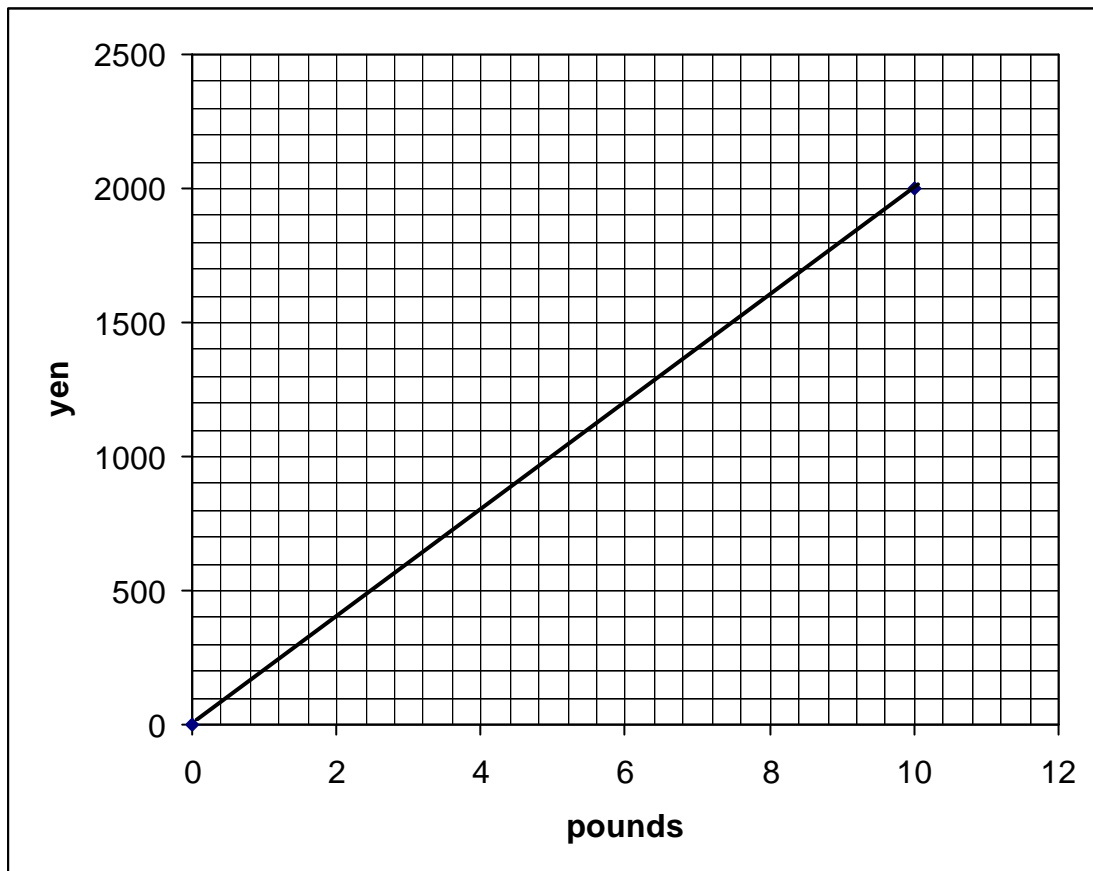TRANSLATION

Find the probability that the letter is:

(a)     an S

(b)     not a T

(c)     a vowel

21. The graph below converts between pounds (£) and Japanese yen.



i)   Use the graph to convert £10 to yen.

ii)  Convert 450 yen to pounds.
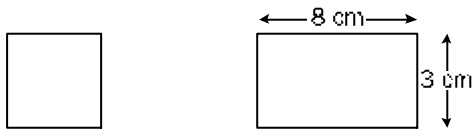
22. Solve the following equations

a) $2x + 4 = 10$

b) $18 - 5x = 3$

c) $x + 3 = 2x - 4$

d) $5(x - 3) = 15$

23. The perimeter of the square and the rectangle are the same.
Work out the length of a side of the square.



Square side =

24.　(a)　Given that $G = 8h + y$

Find G if　(i)　$h = 6$ and $y = -2$

G = _____

(ii)　$h = -12$ and $y = -4$　G = _____

(b)     Given that $x = \dfrac{(a - z)^2}{t}$

Find x if     (i)     $a = 16$   $z = 4$   $t = 12$

                                          x = _____

             (ii)     $a = -8$   $z = -2$   $t = -9$

                                          x = _____

25. If the scale on a map is 1 : 25 000, what is the actual distance in km if the distance on the map is 5cm

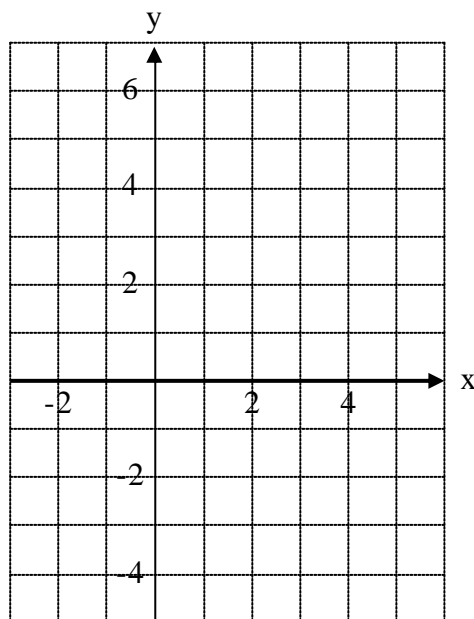26. Complete the tables below for the given equations:

   a)   $y = 2x + 1$                    b)     $x + y = 4$

| x | 0 | 1 | 2 |
|---|---|---|---|
| y |   |   |   |

| x | 0 |   | 1 |
|---|---|---|---|
| y |   | 0 |   |

   c) Use your tables to draw the lines $y = 2x + 1$ and $x + y = 4$ on the grid below.
      Label each line.



**THE END**