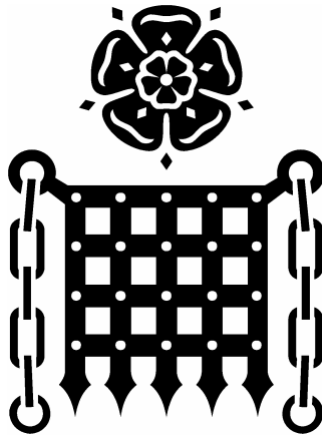# EMANUEL SCHOOL

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

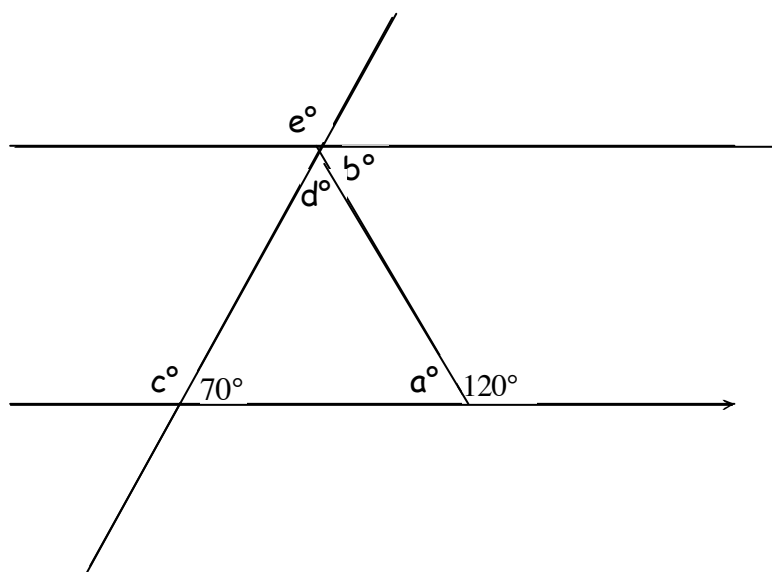(b) 56.23 + 87.1497

(c) 8.4 - 2.481

(d) 0.24 ÷ 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 =

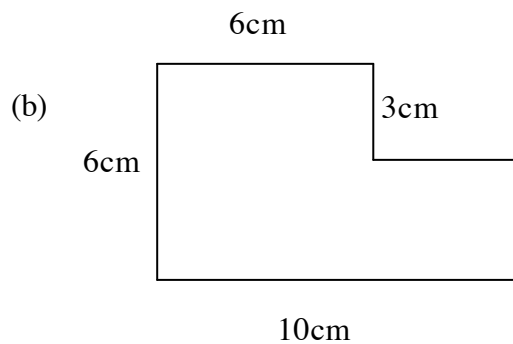d =

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

6cm

(b)

6cm

3cm

10cm

Area = _____

9. Find the value of

a) 2^3

b) 5.3×10^2

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.
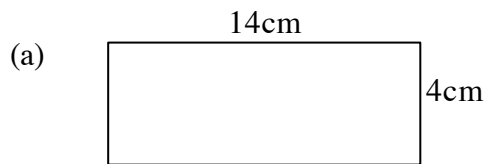
  b) have a packed lunch.
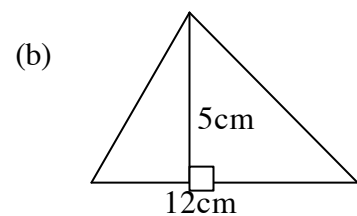
14. Simplify

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) $14, 11, 7, 2,$,_____,

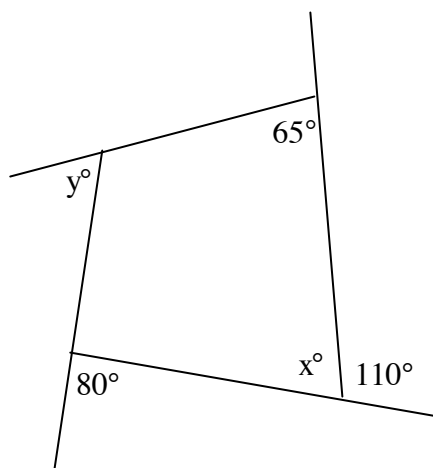(c) $-17.5, -13, -8.5, -4,$ _____, ____   (d) $-17, -12, -8, -5,$ _____, _____,

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° = _____

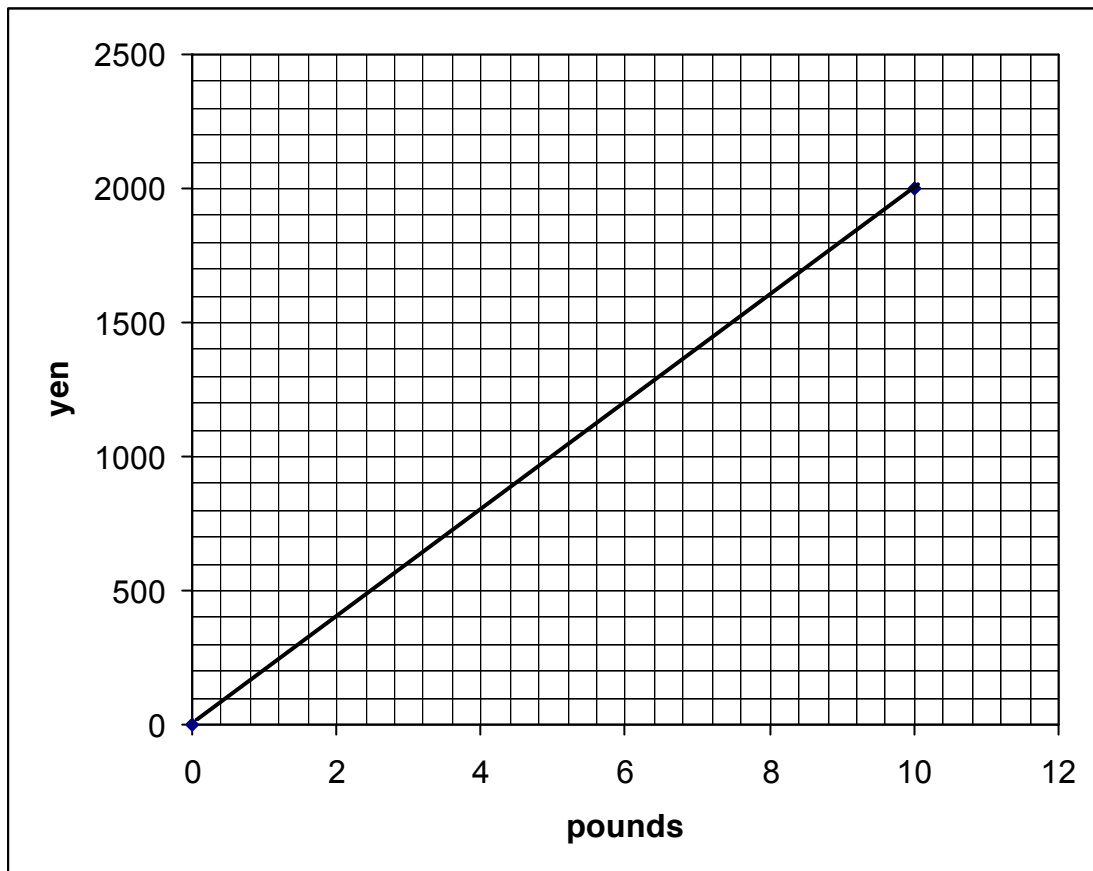20.   A letter is chosen from the word

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.
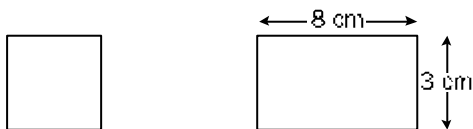
22. Solve the following equations

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

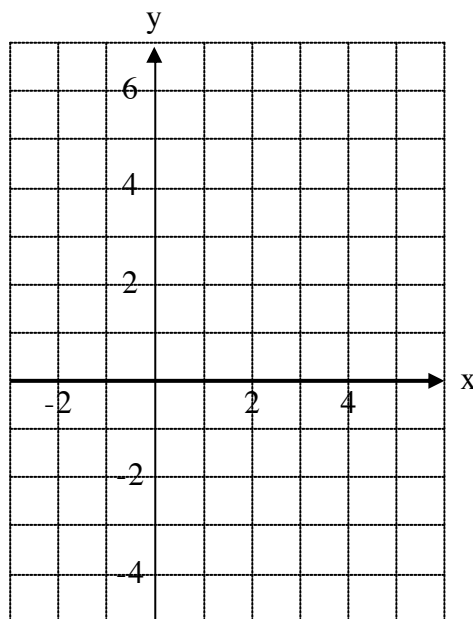26. Complete the tables below for the given equations:

   a) $y = 2x + 1$

x	0	1	2
y			

   b) $x + y = 4$

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