Y7 END-OF-YEAR EXAM

Non Calculator

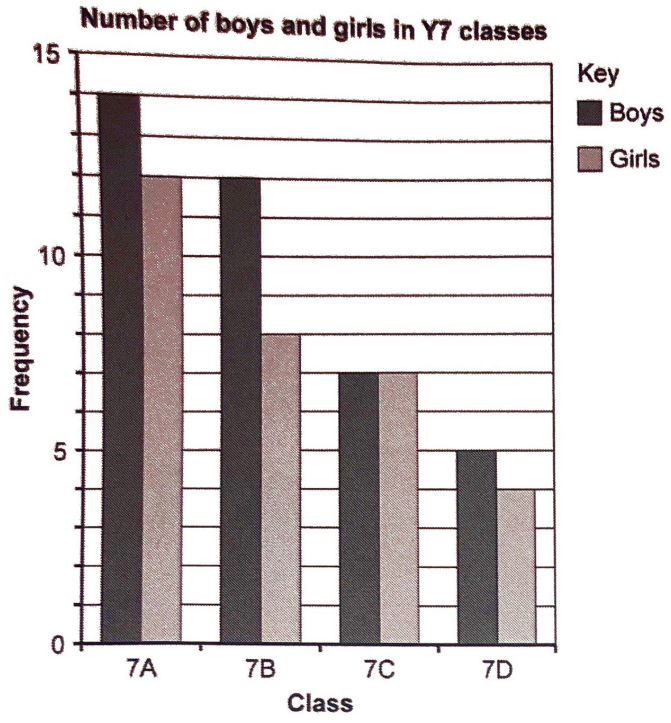
Time allowed: 55 mins

SOLUTIONS

Name:..... Form:.....

Maths Teacher:.....

1 This bar chart gives information about the numbers of boys and girls in four year 7 classes.



a Work out the total number of boys in the four classes.

38

b Write the ratio of boys to girls in 7C.
Give your answer in its simplest form.

1 : 1

(2 marks)

2 A group of children have to study either French or Spanish.
15 girls study Spanish and 21 boys study French.
There are 26 girls altogether. A total of 40 children study Spanish.

a Complete the two-way table.

	French	Spanish	TOTAL
Boys	21	25	46
Girls	11		26
TOTAL	32	40	72

b How many children are in the group?

72

(3 marks)

3 $N = 18$, $M = 24$

a Find the HCF of N and M.

Factors of 18 = 1, 2, 3, 6, 9, 18

Factors of 24 = 1, 2, 3, 4, 6, 8, 12, 24

HCF = 6

6

b Find a common factor of N and M that is a prime number.

2 or 3

c Find the LCM of N and M.

Multiples of 18 = 18, 36, 54, 72, ...

Multiples of 24 = 24, 48, 72, ...

72

(4 marks)

4 Work out

a -8×-4

32

b $14 \div -4$

-3.5

(2 marks)

$$4 \overline{)14.^{2}00} \quad 3.5$$

5 The temperatures in a garden on 5 nights were

−2°C 4°C 4°C −6°C −5°C

a Work out the mean.

$-2+4+4+(-6)+(-5)=-5$

-1 °C

b Work out the range.

$4-(-6)$

10 °C

(2 marks)

6 Simplify

a $5x + y + 2x - 4y$

$7x-3y$

b $4y \times 3y$

$12y^2$

(2 marks)

7 Work out

a $\sqrt[3]{64}$

4

b 2^4

$2\times2\times2\times2$

16

(2 marks)

8. Peg has six times as much chocolate as Reg. Meg has twice as much chocolate as Reg. Peg has how many times as much chocolate as Meg?

(A) Three times as much B Four times as much C Eight times as much
D Ten times as much E Twelve times as much

(1 mark)

9 Expand $4(x - 5)$

$4x-20$

(1 mark)

10 Find the value of $3x^2$

a when $x = 2$ $2^2 = 4$

$3 \times 4 = 12$

12

b when $x = -3$

$(-3)^2 = 9$

$3 \times 9 = 27$

27

(2 marks)

11 $v = u + at$

a Find the value of v when $u = 18$, $a = 6$ and $t = \frac{1}{2}$

$v = 18 + 6 \times \frac{1}{2}$

$= 18 + 3$

21

b Find the value of v when $u = -10$, $a = -5$ and $t = -2$

$v = -10 + (-5)(-2)$

$= -10 + 10$

0

(2 marks)

12 Work out $\frac{7}{8} + \frac{3}{4}$ giving your answer as a mixed number.

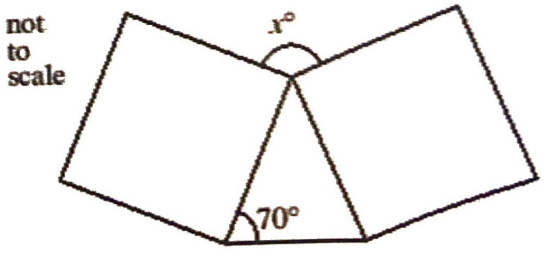
$= \frac{7}{8} + \frac{6}{8} = \frac{13}{8}$

$1\frac{5}{8}$

(2 marks)

13. The diagram shows two equal squares.
What is the value of x?

(A) 140 B 145 C 150 D 155 E 160



(1 mark)

14 Work out $\frac{3}{8} \times \frac{16}{27}$ giving your answer in its simplest form.

$\frac{\cancel{3}^{1}}{\cancel{8}_{1}} \times \frac{\cancel{16}^{2}}{\cancel{27}_{9}} = \frac{2}{9}$

$\frac{2}{9}$

(2 marks)

15 A cat eats $\frac{3}{4}$ of a tin of cat food every day.

How long will 8 tins of cat food last?

$8 \div \frac{3}{4}$

$= 8 \times \frac{4}{3} = \frac{32}{3}$

$10\frac{2}{3}$ days

(1 mark)

(10 days 16 hours)

16 a Change $4\frac{2}{3}$ to an improper fraction.

$\frac{4 \times 3 + 2}{3}$

$\frac{14}{3}$

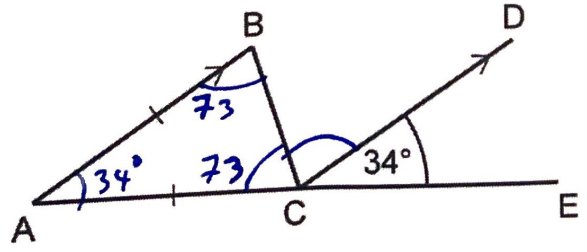
b Work out $4\frac{2}{3} \div \frac{1}{3}$

$= \frac{14}{\cancel{3}_{1}} \times \frac{\cancel{3}^{1}}{1} = \frac{14}{1}$

14

(3 marks)

17 ABC is an isosceles triangle. CD is parallel to AB.



Find the size of angle BCD. 73°

(2 marks)

$180 - 73 - 34$

18 Work out the size of the interior angle of a regular 10-sided polygon.

Exterior $= \frac{360}{10} = 36$

Interior $= 180 - 36$

144°

(2 marks)

19 Write these numbers in order. Start with the smallest number.

0.370 −0.13 0.098 0.2 0.17

−0·13, 0·098, 0·17, 0·2

(1 mark)

20 Work out

a 4.2 − 4.18

$$\begin{array}{r} 4.\overset{1}{2}\overset{1}{\cancel{2}}0 \\ -\ 4.18 \\ \hline 0.02 \end{array}$$

0·02

b 6.2 ÷ 0.5

$= 62 \div 5$

$= 5 \overline{)\,62.^{2}00}$ 12·4

12·4

(3 marks)

21 Write $12\frac{1}{2}\%$ as a fraction. Give your answer in its simplest form.

$\frac{12.5}{100} = \frac{25}{200} = \frac{1}{8}$

$\frac{1}{8}$

(1 mark)

22. In a certain code, A = 1, B = 2, C = 3 etc. Words are encoded by multiplying together the values of their letters, so the code for SQUARE is $19 \times 17 \times 21 \times 1 \times 18 \times 5 = 610\,470$. Similarly, the code for RECTANGLE is 31 752 000. What is the code for TRIANGLE?

A 2 116 800 B 2 721 600 C 19 051 200 D 25 401 600 E 52 920 000

(1 mark)

23 Solve

a $4x + 1 = 2x - 3$

$2x + 1 = -3$

$2x = -4$

$x = -2$

$x =$ −2

b $2(y - 2) = 1$

$2y - 4 = 1$

$2y = 5$

$y =$ 2·5

(5 marks)

24 Work out 4% of £128

1% = 1·28

4% = 5·12

£5·12

(2 marks)

25 Change 5 m^2 to cm^2.

$5 \times 10,000$

50,000 cm^2

(1 mark)

26 There are 168 children in Year 7.

Seventy two of these are girls.

Work out the ratio of boys to girls. Give your answer in its simplest form.

168 − 72 = 96

96 : 72

4 : 3

(2 marks)

27 Ally and Bo share £50 in the ratio 1 : 4

How much more money does Bo get than Ally?

50 ÷ 5 = 10

Ally £10, Bo £40

£30

(2 marks)

28 A bricklayer can lay 50 bricks in an hour.

How long will it take 4 bricklayers to lay 1000 bricks?

4 bricklayers lay 200 bricks an hour

5 hours

(1 mark)

29 A cuboid is 5 cm by 6 cm by 8 cm.

Work out its total surface area.

5 × 6 × 2

5 × 8 × 2

\+ 6 × 8 × 2

236

236 cm²

(2 mark)

30 Here are the first four terms of an arithmetic sequence.

5 10 15 20

a Write an expression, in terms of n, for the nth term of this sequence.

$5n$

Akim thinks that the 21st term of the sequence ends in a 5

b Is he correct? You must give a reason for your answer.

Yes because the odd numbered terms in the sequence all end in a 5.

$21 \times 5 = 105$

(2 marks)

31 X is the point (3, 4), Y is the point (11, 4) and Z is the point (1, 8).

Find the coordinates of the midpoints of

a XY

$= \left(\frac{3+11}{2}, \frac{4+4}{2}\right)$

$(7, 4)$

b XZ

$\left(\frac{3+1}{2}, \frac{4+8}{2}\right)$

$(2, 6)$

(2 marks)

32 Simplify $2x^2 + x + 3x^2 - 4x$

$5x^2 - 3x$

(1 mark)

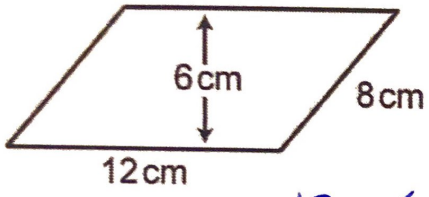
33 Pencils cost x pence each. Rubbers cost y pence each.

Write a formula for the total cost T in pence for 5 pencils and 4 rubbers.

$T = 5x + 4y$

(2 marks)

34 Find the area of this parallelogram.



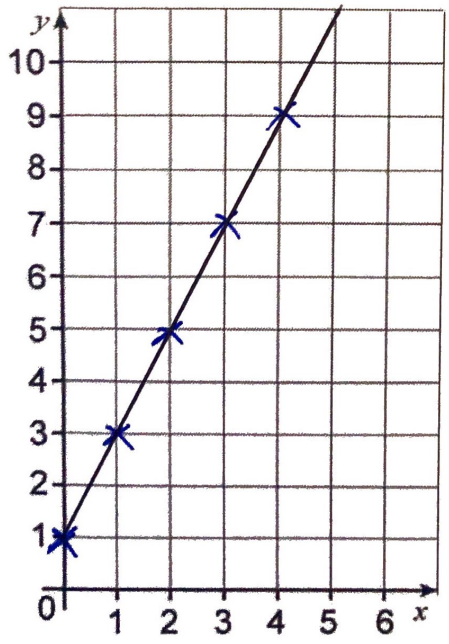
12×6

72 cm²

(1 mark)

35 a Complete the table for the graph of $y = 2x + 1$

x	0	1	2	3	4
y	1	3	5	7	9



b Draw the graph of $y = 2x + 1$ on the grid.

c The point with coordinates $(8, k)$ lies on the graph.

What is the value of k?

$2 \times 8 + 1$

17

(3 marks)

36 Here are four numbers.

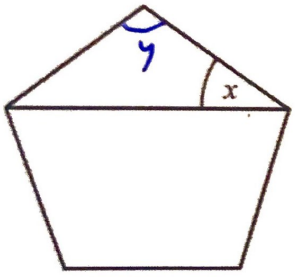
38% $\frac{3}{8}$ 0.308 $\frac{11}{30}$

Put them in order. Start with the smallest number.

0·308, $\frac{11}{30}$, $\frac{3}{8}$, 38%

(2 marks)

37 Here is a regular pentagon.



Work out the size of angle x.

$y = 108°$

$x = \frac{180 - 108}{2}$

36°

(2 marks)

38 Solve $3(x + 5) = 5x + 6$

$3x + 15 = 5x + 6$

$-3x \quad -3x$

$15 = 2x + 6$

$9 = 2x$

$x = 4.5$

(3 marks)

END OF TEST

TOTAL MARKS: 75