

# Primary Mathematics Challenge *Finals*



Wednesday 6th February 2008

Name ..... Class .....

Please do **NOT** start to answer questions until you are told to do so. When you do turn over the page you will have 45 minutes for the challenge.

You must do all the work on your own.

Write down A B C D or E in the space for each answer. When you have finished, use a **B** or an **HB** pencil to copy your answers onto the OMR sheet which will be sent to the MA office for marking.

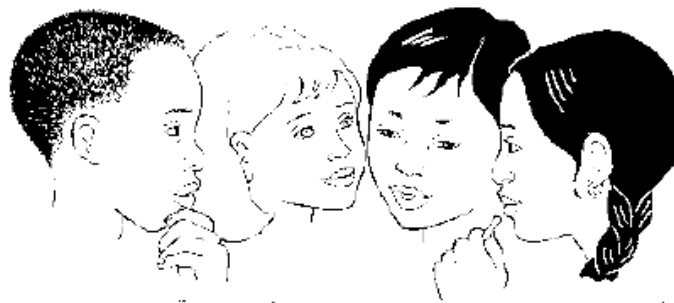
## Practice Questions

P1 Which word has correct spelling?

- A kube                  B squarre                  C triangel  
D subtrakshun        E multiplication

P2 There are two numbers,  $a$  and  $b$ . If  $a + b = 10$   
and  $a - b = 2$ , what is  $a$ ?

- A 2      B 4      C 6      D 8      E 10



MATHEMATICAL ASSOCIATION



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*The Primary Mathematics Challenge*  
is organised by:

The Mathematical Association  
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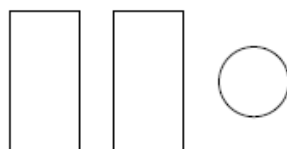


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- 1 The two side views and the top view for a 3d shape are:



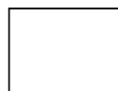
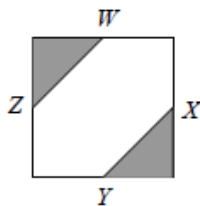
1 mark

What is the name of the shape?

A cylinder B cube C cuboid D pyramid E sphere

- 2  $W$ ,  $X$ ,  $Y$  and  $Z$  are in the middle of the sides of the square.

What fraction of the square is shaded?



1 mark

A  $\frac{1}{8}$  B  $\frac{1}{4}$  C  $\frac{3}{8}$  D  $\frac{3}{4}$  E  $\frac{1}{2}$

- 3 Alice said, "I am thinking of a 2-digit whole number. It is a multiple of four and a multiple of five but not a multiple of six".

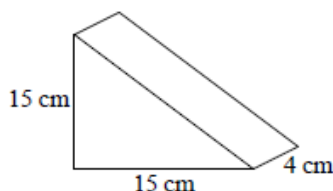
How many 2-digit whole numbers fit this description?



1 mark

A 1 B 2 C 3 D 4 E 20

- 4 The diagram shows a 'Scoffit' sandwich pack (fraction flavour with added decimals). How many of these packs will fit into a  $30\text{cm} \times 15\text{cm} \times 12\text{cm}$  box?



1 mark

A 2 B 4 C 6 D 8 E 12

- 5 Some children from Stonehenge Primary School are standing in a circle. They are evenly spaced and the fourth child is standing directly opposite the seventeenth child. How many children are there altogether?



1 mark

A 17 B 19 C 21 D 23 E 26

- 6 There is a pole in the lake. One-half of the pole is in the ground under water, another one-third of it is covered by the water, and 2m is out of the water. What is the total length of the pole in metres?



1 mark

A 4 B 5 C 6 D 8 E 12

- 7 Which of these shapes cannot be made using six similar matchsticks without breaking them into pieces?

A triangle B square C rectangle  
D tetrahedron E hexagon



1 mark

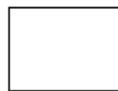
- 8 Teachers need chocolate. My maths teacher's rule is: 'I eat one then save two for my children, then eat one and save two for my children. This continues until I eat the last one'. If she ate 9, how many chocolates were originally in the box?



1 mark

A 9 B 11 C 16 D 25 E 27

- 9 How many factors does 2008 have (including 1 and itself)?



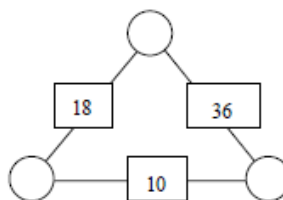
1 mark

A 2 B 4 C 6 D 7 E 8

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- 10 What is the value of  $\frac{\frac{3}{5} + \frac{1}{5}}{\frac{2}{3}}$  ?  1 mark
- A 2      B 3      C 4      D 5      E 6

- 11 This diagram can be completed so that the number in each square is the sum of the numbers in the adjoining circles. What would the sum of the three numbers in the circles be?  1 mark
- A 22      B 32      C 42      D 52  
E There is not enough information.



- 12 If three cats and two kittens weigh the same as two cats and six kittens, how many kittens weigh the same as one cat?  1 mark
- A 2      B 3      C 4      D 6      E 8



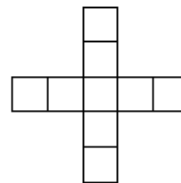
- 13 Last weekend I went to play in a nearby park. It was great fun! I rode my new bicycle that Mum had given me for my birthday. At the park, I saw that there were a total of 17 bicycles and tricycles. If the total number of wheels was 44, how many tricycles were there?  1 mark
- A 3      B 7      C 10      D 11      E 17



- 14 In my room there was one 100 watt light bulb which was on for 5 hours a day. I changed it for a 20 watt low-energy bulb and use it for only 4 hours a day. What percentage of watts is saved each day?  1 mark
- A 20      B 75      C 80      D 84      E 86

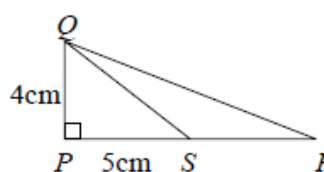


- 15 Bob put each of the numbers 1 to 9 into the squares of this diagram. The total in one direction was 15. The total in the other direction was 34. Which number did he put in the centre square?  1 mark
- A 1      B 2      C 3      D 4      E 5



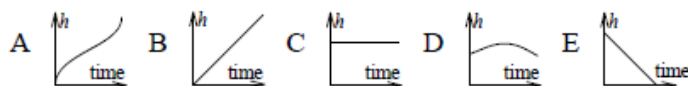
- 16 Which of these always describes the answer when you add three consecutive numbers (such as 34, 35, 36) ?  1 mark
- A even      B odd      C not a multiple of 3      D multiple of 3  
E cannot tell

- 17 In the diagram shown,  $PQR$  and  $PQS$  are right-angled triangles. The area of  $PQR$  is  $24\text{cm}^2$ . What is the area of  $QSR$ ?  1 mark
- A  $10\text{cm}^2$       B  $11\text{cm}^2$       C  $12\text{cm}^2$   
D  $13\text{cm}^2$       E  $14\text{cm}^2$



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- 18 Water is poured steadily into this urn which started empty. Which graph best describes how the height of water changes?




1 mark

- 19 One of these statements is correct. Which one?

- A  $266556 \times 655662 = 374664 \times 466473$   
 B  $366557 \times 755663 = 574664 \times 466475$   
 C  $166558 \times 855661 = 474668 \times 866474$   
 D  $566554 \times 455665 = 374666 \times 666473$   
 E  $966552 \times 255669 = 374665 \times 566473$

1 mark

- 20 The volcano Sockitome has four vents. Each vent emits coloured smoke and ash regularly but at different intervals: 12min, 16min, 20min and 30min. Once I saw them all blow out lava at the same time. How many minutes did I have to wait to see them blow out lava at the same time again?

- A 60    B 80    C 120    D 160    E 240




1 mark

- 21 Sean the shepherd has eighteen animal pens. There are sheep in seven of them and goats in nine of them. Four of the pens contain sheep and goats. How many of Sean's pens contain neither sheep nor goats?

- A 4    B 5    C 6    D 7    E 8




2 marks

- 22 What is the value of  $1 + \frac{1}{2} + \frac{1}{4} + \dots + \frac{1}{16} + \dots$

- A  $1\frac{7}{8}$     B  $1\frac{15}{16}$     C  $1\frac{31}{32}$     D 2    E infinity

2 marks

- 23 William S wrote out the numbers from one to a hundred in English. If he spelt them all correctly how many times did he write the letter V?

- A 20    B 22    C 29    D 31    E 32




2 marks

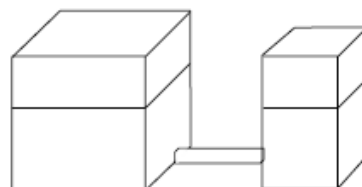
- 24 What is the angle between the hands of a clock which shows twenty past seven?

- A  $70^\circ$     B  $90^\circ$     C  $100^\circ$     D  $110^\circ$     E  $120^\circ$




2 marks

- 25 The diagram shows two oil tanks connected by a pipe. One tank has an  $80\text{cm} \times 80\text{cm}$  cross-section; the other has a  $60\text{cm} \times 60\text{cm}$  cross section. If I pour 100 litres of oil into the larger tank, by how much will the level of oil in the smaller tank rise?




2 marks

- A 1cm    B 10cm    C 20cm    D 25cm    E 100cm