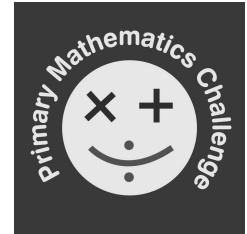


# Primary Mathematics Challenge

11 – 15 November 2019



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. You should use rough paper for this.

For questions 1 – 20, write down A B C D or E in the space for each answer.  
For questions 21 – 25, write down your answer in the space.  
Each correct answer gains one mark.

Good Luck. Enjoy the challenge!

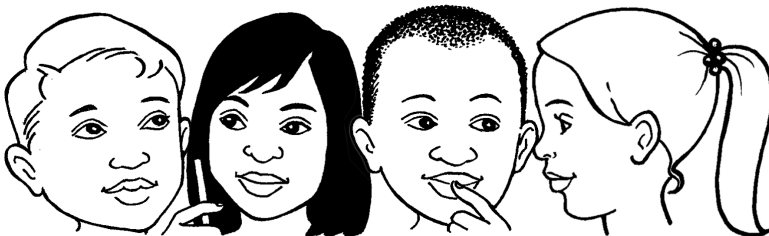
## Practice Questions

P1 Mrs Truelove shares £30 equally between her three children.  
How much does each child receive?

A £3    B £5    C £6    D £10    E £90

P2 Today Burp, my baby sister, is 9 weeks and 2 days old.  
In how many days will she be 10 weeks old?

A 1    B 2    C 3    D 4    E 5



Total marks

/ 25

MATHEMATICAL ASSOCIATION



supporting mathematics in education

© The Mathematical Association  
259 London Road  
Leicester LE2 3BE

[www.primarymathschallenge.org.uk](http://www.primarymathschallenge.org.uk)

Printed on recycled paper

1. These clocks show the time in two cities.  
(London time is ahead of the time in New York).



London

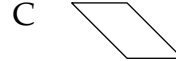


New York

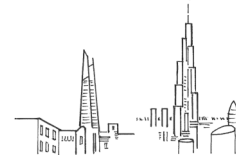
What is the time difference between the two cities?

- A 3 hours      B 5 hours      C 7 hours      D 9 hours      E 11 hours

2. Which of the shapes below is **not** a *quadrilateral*?




3. The tallest building in London, the Shard, is 310 m high.  
The tallest building in the world, the Burj Khalifa in Dubai, is 828 m high.



How much higher is Burj Khalifa than the Shard?

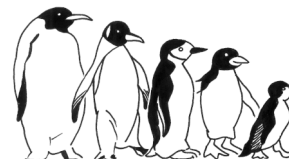
- A 238 m      B 318 m      C 438 m      D 518 m      E 618 m

4. What is the smallest number of coins needed to make 61p?

- A 2      B 3      C 4      D 5      E 6

5. Here are some facts about penguins:

*Little penguins* can grow to 30 cm, *Macaroni penguins* can grow to 70 cm, *Chinstrap penguins* can grow to 76 cm, *King penguins* can grow to 100 cm and *Emperor penguins* can grow to 122 cm.



Which penguin can grow closest to the height of an average eleven-year-old child?

- A Little      B Macaroni      C Chinstrap      D King  
E Emperor

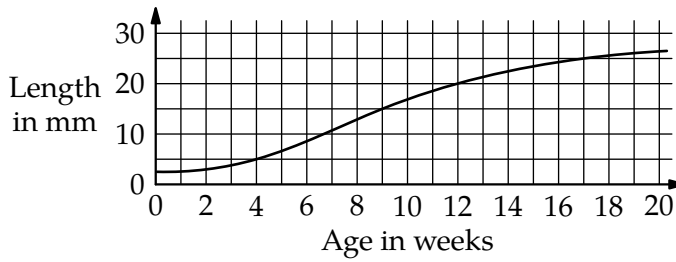
6. Speedy Wiggins cycles to school, a journey that takes 30 minutes at 12 mph.

How far does he travel to school?



- A 3 miles      B 4 miles      C 6 miles      D 10 miles      E 20 miles

7. The graph shows how the length of the legs of Martin’s pet spider grew as the spider became older.



How many weeks old was the spider when its legs reached a length of 20 mm?

- A 10                  B 12                  C 14                  D 16                  E 18

8. Susie Starfish and her five sisters went to the cinema with Ollie Octopus and his four brothers. They bought a box of popcorn for every arm they had.




How many boxes of popcorn did they buy?

- A 13                  B 57                  C 62                  D 65                  E 70

9. Hamish starts his homework at 6 pm and finishes at 8 pm. He spends 10 minutes sorting his pencils, 25 minutes on *Look-Time* and has a 15-minute break.

How long does he have left to spend on his homework?

- A 70 minutes          B 80 minutes          C 90 minutes          D 100 minutes  
E 150 minutes

10. Maddie is 2 years older than Lola, and Lola is 6 years younger than Ellie.




How much older is Ellie than Maddie?

- A 2 years                  B 3 years                  C 4 years  
D 5 years                  E 6 years

11. Every week, Robyn swims while Sam sings. For every 2 of Sam’s songs, Robyn swims 9 lengths.

If Robyn swims 54 lengths, how many songs does Sam sing?

- A 6                  B 8                  C 10                  D 12                  E 18

12. What is the smallest possible number of children in a family, if each child has at least one brother and at least one sister?

- A 2                      B 3                      C 4                      D 5                      E 6

13. The Highway Code road sign that warns of wild animals ahead is shown on the right.

Which of the following signs is **not** a rotation of this sign?





14. There are 12 beads in a box. Each bead is green or red or white. I take out 2 red beads and 1 white bead. I now have the same number of beads of each colour in my box.

How many white beads did I have at first?

- A 1                      B 2                      C 3                      D 4                      E 5

15. Salah has collected more than 20 football cards. When he puts his cards in piles of four, he has three cards left over. When he puts the cards in piles of five, he has four cards left over.

Which of the following could be the number of cards he has in total?

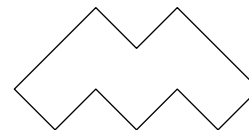
- A 27                      B 31                      C 35                      D 39                      E 43




16. In this M-shaped decagon all the angles are right angles and each side is either 5 cm or 10 cm long.

What is its area in  $\text{cm}^2$ ?

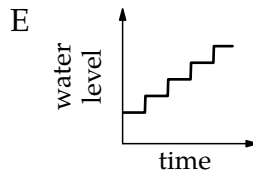
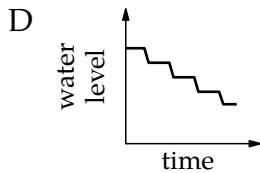
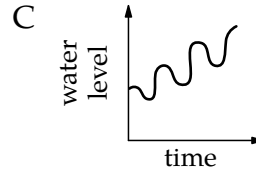
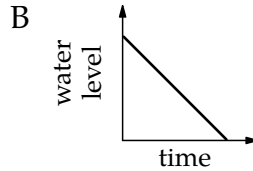
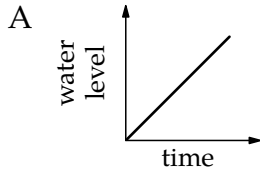
- A 125                      B 130                      C 135                      D 140                      E 145



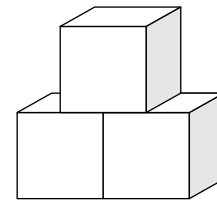
17. A clever crow called Crawford drops stones one at a time into a glass beaker in order to raise the height of the water so that it can have a drink.




Which of these graphs shows how the water level is changing?



18. Three cubes whose edges are of length 1 cm are stuck together as shown on the right.




What is the total surface area of the new shape?

- A  $14 \text{ cm}^2$       B  $16 \text{ cm}^2$       C  $18 \text{ cm}^2$   
 D  $20 \text{ cm}^2$       E  $22 \text{ cm}^2$

19. Granny and the triplets Cara, Cate and Chris all have their birthdays today.

The ages of all four of them total 120 years.  
 Granny is 5 times as old as each of the triplets.




When were the triplets born?

- A 2000      B 2002      C 2004      D 2006      E 2008

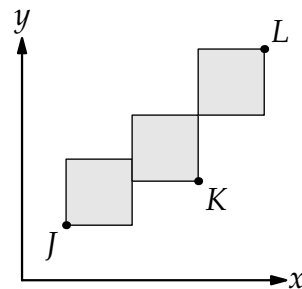
20. The diagram shows three identical squares.

The sides of each of the squares are parallel to the  $x$  and  $y$  axes.

Point  $J$  has coordinates  $(4, 5)$ .

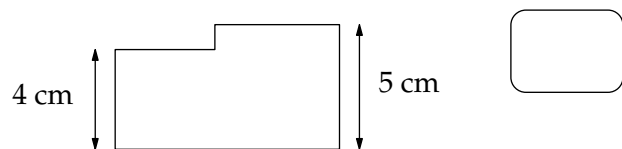
Point  $L$  has coordinates  $(22, 21)$ .

What are the coordinates of  $K$ ?




- A  $(12, 8)$       B  $(13, 9)$       C  $(14, 9)$       D  $(15, 10)$       E  $(16, 9)$

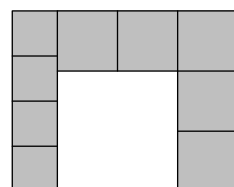
21. The shape shown on the right is made of two squares placed edge-to-edge.  
 What is the length in cm of the perimeter of the whole shape?



22. In a window of an old garden shed there are some spiders (with eight legs) and some ants (with six legs). If there are 64 legs altogether, what is the largest number of ants there can be in this window?

23. If I count down from 2019 by first taking away 20 and then 19 and then 20 and then 19 and so on, what is the last positive number I will reach?

24. The diagram on the right shows 10 squares.  
 What is the ratio of the unshaded area to the shaded area?



25. In the calculation below, four of the five missing digits are the same:

$$\square\square\square \times \square\square = 11\,655$$

What is the sum of the five missing digits?