

# Bexley Selection Tests

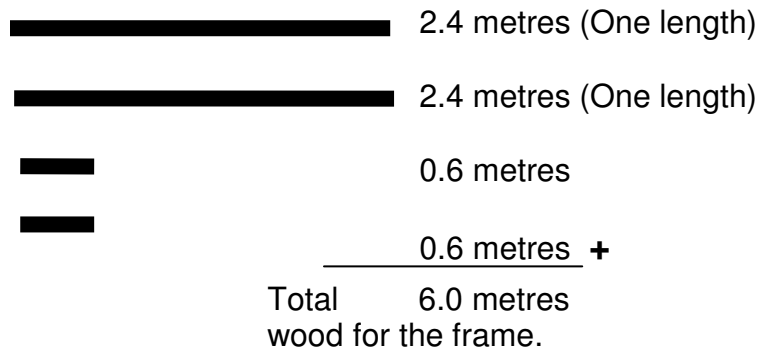
## Specimen Questions - Mathematics

### Answers and Comments for Parents

#### Question 1

A This is the correct answer, well done!

B, C, D, E This is not the correct answer. This is *one way* of doing the question:



Total wood available:  $2.4 \times 3 = 7.2$  metres.

Once the frame is made there will be  $7.2 - 6.0$  metres left over



To help children who have got this question wrong, try writing a list of the things you have to find out:

How much wood is needed for the frame?

How much wood is available?

How much would be left over at the end?

Some children may find an alternative way of answering the question easier to understand.

You may notice that the lengths of wood are the same as the longer side of the frame. Using this approach the two longer sides will be made with two of the three lengths available.

This leaves the two smaller sides of the frame ( $2 \times 0.6 \text{ metres} = 1.2 \text{ metres}$ ) to be taken from the third length of wood ( $2.4 \text{ metres} - 1.2 \text{ metres} = 1.2 \text{ metres}$ ).

## Question 2

**C** You have the correct answer.

**B, D** You do not have the correct answer, which asked *how many people* not a fraction or percentage.

Use your answer to calculate the number of people.

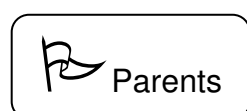
**A** You do not have the correct answer.

You may have *added* the number of Tottenham supporters to the total number of spectators at the match.

**E** You do not have the correct answer.

Number of Manchester United supporters is  $\frac{60}{100} \times 50,000 = 30,000$

So number of Tottenham supporters is  $50,000 - 30,000 = 20,000$



Pupils may need help in splitting a problem up into stages that can be calculated in turn to get the correct answer.

Calculators are not allowed in the selection tests so a manual method has to be used. Instant recall of multiplication tables and addition facts means the question can be attempted with confidence.

Children need to take care to *answer the question*. Here it asked for the number of people so 40% was the wrong answer even though it did represent the proportion of Tottenham supporters.

Some pupils may be used to changing the 60% to a decimal fraction (0.6) rather than a fraction to carry out the calculation. This looks like this:

$$0.6 \times 50,000 = 30,000$$

It is possible to use other facts about percentages to calculate the number of Tottenham supporters directly. Children need to remember that 100% is the whole group of 50,000 supporters, Manchester United supporters are 60% so the Tottenham supporters make up 40%. Using a decimal fraction the calculation then becomes:

$$0.4 \times 50,000 = 20,000 \text{ Tottenham supporters.}$$

Another way may be to find the number that 10% represents and then multiply by 4.

### Question 3

**C** You have the correct answer

**A,B,D,E** You do not have the correct answer. One way of calculating the time is to imagine a clock face. From 14:22 to 15:00 would be 38 minutes and from 15:00 to 15:30 is 30 minutes so the total time is 68 minutes or 1 hour and 8 minutes.



This question involves interpreting information from a timetable and then using it to calculate a time interval.

The train in question leaves Dunster at 14:22 and arrives in Bishops Lydeard at 15:30. One way of calculating the time is to imagine a clock face. From 14:22 to 15:00 would be 38 minutes and from 15:00 to 15:30 is 30 minutes so the total time is  $(38 + 30) = 68$  minutes or 1 hour and 8 minutes.

Alternatively a subtraction works easily in this case  $(15 - 14)$  hours and  $(30 - 22)$  minutes as there is no need to 'borrow' from the hours. However, this would be necessary if you were to travel from Watchet to Bishops Lydeard for example where the timing would be 14:47 to 15:30.

### Question 4

**D** You have the correct answer.

**A,B,C,E** You do not have the correct answer. The tickets would cost  $(£8.60 + £4.30) = £12.90$ .

The change from £20 would be  $(£20.00 - £12.90) = £7.10$



Start to share with children the everyday calculation you need when traveling or shopping.

Pupils may need help in splitting a problem up into stages that can be calculated in turn to get the correct answer.

Calculators are not allowed in the selection tests so a manual method has to be used. Instant recall of multiplication tables and addition facts means the question can be attempted with confidence.

Follow the methods used in your child's school for subtraction to avoid confusing them.

## Question 5

**C** You have the correct answer.

**A, B, D, E** You do not have the correct answer.

You can see that the level of milk is between 300ml and 400ml. There is one graduation on the scale between 300 and 400 and the level is above that. Clearly the value is not A (350ml) or B (400ml) or D (300ml) or E (0.45 litres or 450 ml) as the level appears between 350ml and 400 ml. The best estimate of the answer is 375ml (answer C).



Children sometimes find reading scales quite difficult. Practice with rulers, old fashioned kitchen weighing scales, bathroom scales, thermometers, tyre pressure gauges; anything that has a scale to interpret.

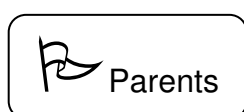
It helps if the practice is with a practical activity like cooking, making things, checking pond temperature etc.

## Question 6

**D** You have the correct answer

**A,B,C,E** You do not have the correct answer. The reading on the scale now shows 600 grams (or 0.6 Kg). You can see this as there are 10 divisions between 0 and 1 Kg so each division represents 100 grams or 0.1 Kg. Count the divisions from 0 to find there are 6 (x 100 grams) = 600 grams.

Andre then adds his 200 grams of raisins so the scale will now show 800 grams or 0.8Kg.



Children sometimes find reading scales quite difficult. Practice with rulers, old fashioned kitchen weighing scales, bathroom scales, thermometers, tyre pressure gauges; anything that has a scale to interpret.

It helps if the practice is with a practical activity like cooking, making things, checking pond temperature etc.

Children will also need to know that there are 1000 grams in a Kilogram.

In this example the scale also lends itself to a discussion of how 0.1Kg and 100 grams are the same weight.

## Question 7

**B** You have the correct answer

**A, C** You do not have the correct answer.

**D** You do not have the correct answer. It looks like you may have calculated the total that they would have taken at the original price ( $500 \times \text{£}1.89$ ). You need to subtract the amount that Wescos would have taken selling at the reduced price ( $500 \times 99\text{p}$ ) =  $\text{£}495$

**E** You do not have the correct answer. It looks as though you may have calculated the amount that Wescos would have taken selling the reduced price eggs but not subtracted this from the amount selling at the full price



Pupils may need help in splitting a problem up into stages that can be calculated in turn to get the correct answer.

Calculators are not allowed in the selection tests so a manual method has to be used. Instant recall of multiplication tables and addition facts means the question can be attempted with confidence.

Try to get children involved in looking at prices and comparing them in the supermarket. Some shelf labels show the unit price so that alternatives can be compared easily.

## Question 8

**A** You have the correct answer.

**B C D E** You do not have the correct answer. Check your working and make sure that you did multiply by 40 and 5 keeping the place value secure by writing numbers neatly in columns and/or rows.

You won't be able to use a calculator in the test but you might like to use one now to check where you have made a mistake.



There may be a few questions that are set, like this question, as simple calculation. However, the majority of questions will be set in a practical context and involve some problem solving as well as applying a calculation.

Calculators are not allowed in the selection tests so a manual method has to be used. Instant recall of multiplication tables and addition facts means the question can be attempted with confidence.

Calculators may be useful to check answers and follow through any manual calculations that have got to the wrong answer.

Follow the methods used in your child's school for multiplication and all the four rules (+, -,  $\times$ ,  $\div$ ) to avoid confusing them. Most children will also have the opportunity to learn alternative methods at stages in primary school as an aid to understanding the processes involved.

Pupils will also have been encouraged to check their answers by estimation. For example, in this case they may have tried  $300 \times 50 = 15000$  mentally just to see their answer was 'possible'.

Many layouts are possible. Here are two.

$$\begin{array}{r}
 347 \\
 \underline{45} \times \\
 13880 \quad \times 40 \\
 \underline{1735} \quad \times 5 \\
 \underline{\underline{15615}}
 \end{array}$$

$$\begin{array}{r}
 347 \\
 13880 \quad \times 40 \\
 \underline{1735} \quad \times 5 \\
 \underline{\underline{15615}} \quad \times 45
 \end{array}$$

### Question 9

**B** You have the correct answer.

**A C D E** You do not have the correct answer.



Looking at some packaging before it is recycled and seeing what net made the box may be useful to help pupils visualise these shapes.

### Question 10

**C** You have the correct answer.

**A B D E** You do not have the correct answer.



Some straightforward 2-stage problems will be in the test.

In many of the examples simple multiplication tables and knowledge of families of numbers will be sufficient to answer the question.

### Question 11

**E** You have the correct answer.

**A B C D** You do not have the correct answer.



Splitting the problem up into:

How many tiles?	(6 x 8 = 48)
How many dark tiles?	(16)
Making the fraction	(16/48)
Reducing	(1/3)

Is one way of getting the answer.

Some children will understand enough to see that each row of tiles has two dark tiles out of 6 ( $2/6$  dark =  $1/3$ ) and that this fraction will also apply to the whole floor.

### Question 12

**A** You have the correct answer.

**B C D E** You do not have the correct answer.



Simple problems using negative (directed) numbers crop up in examples like this with temperature and so they often have a scale to read as well as a calculation.

Many teachers would introduce this with a number line and work towards a number line with values from (say) -10 to +10.

### Question 13

**E** You have the correct answer.

**A B C D** You do not have the correct answer.



Pupils need to know the simple conversion of fractions and to be able to interpret decimals and use their number knowledge.

### Question 14

**B** You have the correct answer.

**A C D E** You do not have the correct answer.



Pupils need to know all basic number facts like tables and additions if they are to not waste time in the maths test.

What is the best way to do this question? Possibly to evaluate all the boxes in the right column and then work down the left column seeing if the values match.

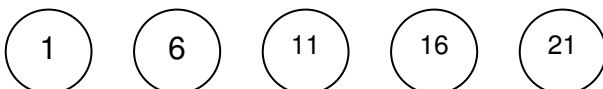
Of course you only have to look until you find the first one that does not match - you know there is only one correct answer!

### Question 15

**C** You have the correct answer.

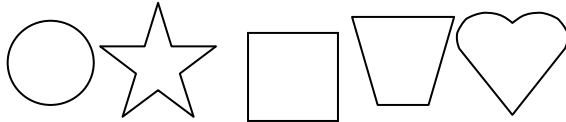
**A B D E** You do not have the correct answer.

Break the pattern into groups of 5. Look and see how the shapes repeat. Look at how the values in the various shapes also form a pattern. for example, just looking at the circles:





You will see it is a repeating pattern:



The pattern is essentially about groups of 5 shapes.

If you notice that a heart is 5, 10 and will be 15 and 20. It's then easy to count on 21 (circle) 22 (star) and 23 (square).

There are probably more ways of doing this example and talking about the problem would be a good way of helping your child.

### Question 16

**D** You have the correct answer.

**A B C E** You do not have the correct answer.

$$178 + 43 = 221 \text{ people}$$

$$\text{number of coaches} = 221 \div 46$$

$$= 4 \text{ remainder } 37$$

So Mrs Rhodes will need 5 coaches if everyone is to go



Remember children will have used a variety of methods to do long division. Follow the methods taught in your child's school.

They could make up a table using mental arithmetic and number knowledge:

1	coach	46	people
2		92	
4		184	
5		230	

Pupils will also be used to using estimation to get a near answer they can improve on. For example, estimate coaches were 50 seats then 200 would need 4 coaches and 250 would need 5 coaches.

Of course you can't take a fraction of a coach so even if you use a calculator to do the division (and calculators are not allowed in the real test) then you would still have to deal with the fractional part of the answer.

## Question 17

**E** You have the correct answer

**A, B** This is the coordinate of one of the markers already on the whiteboard.

**C** These coordinates don't make up a rectangle.

**D** You may have put the coordinates the wrong way round. The horizontal coordinate (x) is put first and the vertical second (y).

One way of obtaining the answer is to look at the coordinates of the existing three corners and how they differ. Use this information to decide where the new point will be. The top right marker is placed at (6,7). The required new corner will be one unit to the right of the top right marker and 3 units below the top right marker. The new point will be:  $(6+1, 7-3)$  or  $(7,4)$



Some paper games like 'battleships' practice coordinates but make sure they have the grids drawn conventionally.

The coordinates are always measured 'along and then up'.

## Question 18

**B** is the statement that is NOT true.

All the others are correct and can be checked using values from the chart.



Children may need some practice interpreting charts and graphs.

Try plotting some. What can you find out from a chart of car mileage for each day of the week? The temperature in the garden each day of the week? How often does each number come up in 100 throws of two dice?

## Question 19

**A** Is the correct answer.

**B, C, D, E** You would need to calculate the area of the run by multiplying the sides of the rectangle. This is  $(2 \times 3) = 6 \text{ m}^2$ .

You then need to calculate the number of chickens by dividing the area by 1.3 since each chicken needs  $1.3 \text{ metres}^2$  of area.



This question is based on knowledge of area of a rectangle and a two stage problem solving strategy.

Area calculations are needed in lots of DIY calculations with paint, tiles, fertilizer, grass seed etc.

The question does not ask the pupil to do the calculation as it only seeks to test area and some problem solving. Pupils could use a calculator to finish the problems and get a real number but a calculator is not provided in the actual test.

## Question 20

**E** You have the correct answer.

**A, B, C, D** You do not have the correct answer. All the quantities have to be increased in the proportion 10:4.

One way is to make a table:

4	people use	220g	tinned fruit cocktail
1	person uses	$(220 \div 4)$ g	tinned fruit cocktail
10	people use	$(55 \times 10)$ g	tinned fruit cocktail

Note:  $220 \div 4 = 55$



Other ways may include making a fraction  $\frac{10}{4}$  (or  $2 \frac{1}{2}$ ) or a decimal 2.5 and use this as a multiplier.