BROAD HORIZON
TUITION

# 11+ Tuition

## Year 5

## Week 9 – Lesson

# ANSWERS

**Starter Task – Quick Revision**

1) 7:4
2) MMMCDLXXXIX
3) 9 minutes
4) $42cm^3$

5) 180 (60 blue and 120 pink)
6) 220
7) 157.5
8) 1.74(0) Litres
9) 1.794 Kg

## Starter task – Vocabulary Homework Test

### Exercise C

1. Commotion
2. Swarm
3. Meditate
4. Deflect
5. Peril
6. Diagnose
7. Devour
8. Harmonious
9. Forgery
10. Obsolete

# Maths

## Core Maths Refresher – Algebra

### Answer Sheet: Algebra

| question | answer | marks | notes |
|---|---|---|---|
| **1.** Use simple formulae. | | | |
| a | 3a = 12 → a = **4**<br>30 = 5b → b = **6**<br>8c = 72 → c = **9**<br>48 = 12d → d = **4** | 4 | Award one mark for each answer. |
| b | 20 = 4h + 4 → h = **4**<br>3i + 5 = 11 → i = **2**<br>14 = 6j - 4 → j = **3**<br>2k – 5 = 5 → k = **5** | 4 | Award one mark for each answer. |
| c | △ = 3a → △ = **21**<br>4 + a = ⬠ = **11**<br>◇ = 10 - a → ◇ = **3**<br>a + a = □ = **14** | 4 | Award one mark for each answer. |
| **2.** Generate and describe linear number sequences. | | | |
| a | **39** **47** 55 63 71 | 1 | |
| b | 26 | 1 | |
| c | 22 **38** **54** 70 | 1 | |
| d | Term: 1st, Calculation: 5 x 1 + 1, Value: 6<br>Term: 5th, Calculation: **5 x 5 + 1**, Value: **26**<br>Term: 10th, Calculation: **5 x 10 + 1**, Value: 51<br>Term: 20th, Calculation: 5 x 20 + 1, Value: **101** | 4 | Award one mark for each box correctly completed. |
| e | (3 x 4 – 1) 3 x 5 - 1 3 x 4 + 1 | 1 | |
| f | 10n + 2 = 92 | 2 | Award two marks for the formula correctly identified.<br>Award one mark for a correct answer, but no formula. |
| **3.** Express missing number problems algebraically. | | | |
| a | 9h - 16 16h + 9 (9h + 16) | 1 | |
| b | When Emily is 11, Becky will be **15**<br>When Becky is 17, Emily will be **13** | 2 | Award one mark for each correct answer. |
| c | (l+w) x 2 **or** 2l+2w | 1 | |

<table>
<tr><th>question</th><th>answer</th><th>marks</th><th>notes</th></tr>
<tr><td rowspan="2">d</td><td>The cost of tiling a floor where the area is 10 square metres would be £60</td><td>1</td><td>Award one mark for each correct answer.</td></tr>
<tr><td>The area of a floor where the tiles cost £110 would be 20 square metres</td><td>2</td><td>Award one mark if it is clear that the calculation (110 - 10) ÷ 5 has been used but the answer is wrong.</td></tr>
<tr><td>e</td><td>8h – 5<br>or 8 x h – 5<br>or (8h) – 5<br>or (8 x h) - 5</td><td>1</td><td></td></tr>
<tr><td colspan="4">4. Find pairs of numbers that satisfy an equation with two unknowns.</td></tr>
<tr><td>a</td><td>1 x 18<br>2 x 9<br>3 x 6</td><td>1</td><td rowspan="2">Award one mark for all three number pairs identified.</td></tr>
<tr><td>b</td><td>1 x 12<br>2 x 6<br>3 x 4</td><td>1</td></tr>
<tr><td>c</td><td>e = 3 f = 7<br>g = 6 h = 3<br>i = 8 j = 2</td><td>3</td><td>Award one mark for each pair of numbers identified.</td></tr>
<tr><td colspan="4">5. Enumerate possibilities of combinations of two variables.</td></tr>
<tr><td></td><td>1 x 2 = 2<br>2 x 2 = 4<br>3 x 2 = 6<br>4 x 2 = 8<br>5 x 2 = 10</td><td>1</td><td>Award one mark for all 5 possible combinations identified.</td></tr>
<tr><td></td><td><table><tr><th>Value of a</th><th>Value of b</th></tr><tr><td>2</td><td>18</td></tr><tr><td>1</td><td>11</td></tr><tr><td>4</td><td>32</td></tr><tr><td>3</td><td>25</td></tr></table></td><td>4</td><td></td></tr>
<tr><td></td><td></td><td>Total 40</td><td></td></tr>
</table>

## Triangular Number Problems

Let's calculate them:

1. $T_1 = \frac{1(1+1)}{2} = \frac{1\times2}{2} = 1$
2. $T_2 = \frac{2(2+1)}{2} = \frac{2\times3}{2} = 3$
3. $T_3 = \frac{3(3+1)}{2} = \frac{3\times4}{2} = 6$
4. $T_4 = \frac{4(4+1)}{2} = \frac{4\times5}{2} = 10$
5. $T_5 = \frac{5(5+1)}{2} = \frac{5\times6}{2} = 15$
6. $T_6 = \frac{6(6+1)}{2} = \frac{6\times7}{2} = 21$
7. $T_7 = \frac{7(7+1)}{2} = \frac{7\times8}{2} = 28$
8. $T_8 = \frac{8(8+1)}{2} = \frac{8\times9}{2} = 36$
9. $T_9 = \frac{9(9+1)}{2} = \frac{9\times10}{2} = 45$
10. $T_{10} = \frac{10(10+1)}{2} = \frac{10\times11}{2} = 55$

So the first 10 triangular numbers are:

$$1, 3, 6, 10, 15, 21, 28, 36, 45, 55$$

### Part 2: Fill in the Blanks

2. **The 7th triangular number is:**
   From the previous solution, $T_7 = 28$.
3. **The 15th triangular number is:**
   Use the formula $T_n = \frac{n(n+1)}{2}$.
   $T_{15} = \frac{15(15+1)}{2} = \frac{15\times16}{2} = 120$.
4. **For $n = 4$, $T_4 =$:**
   This is asking for the sum of the first four numbers:
   $T_4 = 1 + 2 + 3 + 4 = 10$.

**Part 3: Word Problems**

5. If you arrange 21 objects in a triangle, how many rows of objects do you have? 6 rows
6. A triangular number is 36. What is the value of *n*? *n* = 8

## Practice – Long Maths Word Problems

### Test 17 — pages 56-58

**1. £207 058**

Writing the value in figures gives 207 058.

**2. E**

Paul has read 421 – 414 = 7 pages fewer than Mandy, so he has 7 more pages to read. 389 + 7 = 396 pages to go.

**3. D**

1000 ml = 1 litre, so the ratio of orange juice to water is 1 : 1.5. Doubling each number in the ratio gives 2 : 3.

**4. 2.95 litres**

1000 ml = 1 litre and 450 ml = 0.45 litres, so the total amount of juice drink Quentin makes is 1 + 0.45 + 1.5 = 2.95 litres (you can use the column method to work this out).

**5. E**

The perimeter of the three buildings is 10 + 4 + 10 + 6 + 4 + 10 + 4 + 10 + 6 + 4 = 68 m.

**6. 360 $m^3$**

Each building has a volume of $10 \times 4 \times 3 = 10 \times 12 = 120$ $m^3$. There are 3 buildings, so the total volume is $3 \times 120 = 360$ $m^3$.

**7. (13, 4)**

Point *P* is five squares away from the mirror line, so its reflection will also be five squares the other side of the mirror line. This is (13, 4).

**8. 15 mm**

127 – 112 = 15 mm (you can use the column method).

**9. C**

112 + 127 + 119 + 126 = 484 (you can use the column method here). There are four readings, so the mean is 484 ÷ 4 = 121 mm (you can use partitioning).

**10. 18 $m^2$**

The area of the wall is $3 \times 12 = 36$ $m^2$, so half of this is $36 \div 2 = 18$ $m^2$.

**11. A**

The area of the wall is $3 \times 12 = 36$ $m^2$. 1 roll of wallpaper covers 3.1 $m^2$, so 10 rolls cover 31 $m^2$, 11 rolls cover 31 + 3.1 = 34.1 $m^2$ and 12 rolls cover 34.1 + 3.1 = 37.2 $m^2$. So Harry needs 12 rolls of wallpaper.

**12. 17°**

The chair makes a triangle with the floor so its angles add up to 180°. The two angles given add up to 90 + 41 = 131°, so the third angle is 180 – 131 = 49° (you can use partitioning). Angles on a straight line add up to 180°, so $x + 114 + 49 = 180$. 114 + 49 = 163, so $x = 180 - 163 = 17°$ (use partitioning again).

## Test 18 — pages 59-61

**1. 16**

96 ÷ 6 = 16 (you can use partitioning here).

**2. B**

19 cm and 19 mm are too small for a car. 19 m and 0.19 km (= 190 m) are too large. So the only remaining option is B, 1.9 m.

**3. A**

62 × 3 is the same as 60 × 3 + 2 × 3. 6 × 3 = 18, so 60 × 3 = 180. So 62 × 3 = 180 + 2 × 3 = 186.

**4. 27**

21 days is 3 weeks. So the factory can make 3 × 9 = 27 engines.

**5. D**

You don't need to triple the whole number — just the hundredths column and columns to the right. 25 × 3 = 75, so the number in the hundredths column is 7.

**6. 44%**

Tanvi won $^{11}/_{25}$ games. Multiplying both numbers by 4 gives $^{44}/_{100}$, which is the same as 44%.

**7. B**

Maria's total number of points scored is her mean score multiplied by the number of games she played. This is 11 × 25, which is the same as 10 × 25 + 1 × 25 = 250 + 25 = 275.

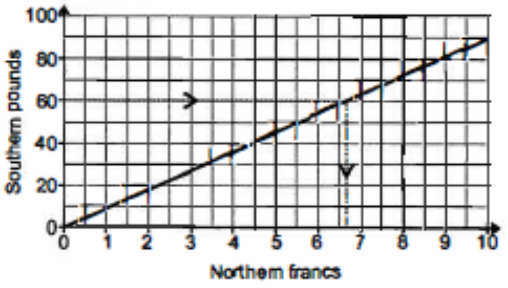
**8. 55 m²**

The area of the large panel is 5 × 5 = 25 m². Each smaller panel has an area of 2 × 5 = 10 m², so the total area is 25 + 10 × 3 = 25 + 30 = 55 m².

**9. C**

Round £23 092 down to £20 000 and 387 up to 400. So 23092 ÷ 387 is approximately 20 000 ÷ 400 = £50, so C is the closest answer.

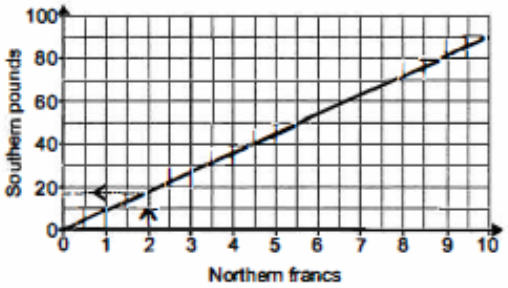
**10. 6.7**




Reading along from 60 Southern pounds and down from the line gives around 6.7 Northern francs (allow 6.6-6.8).

**11. A**

200 = 2 × 100, so use the graph to work out the number of Southern pounds Radek would receive for 2 Northern francs, then multiply the answer by 100.




From the graph, 2 Northern francs are worth 18 Southern pounds, so 200 Northern francs are worth 18 × 100 = 1800 Southern pounds.

**12. 72 m²**

5 litres of paint covers 15 m², so 1 litre covers 15 ÷ 5 = 3 m². 12 tubs contains 12 × 2 = 24 litres, so 12 tubs could cover 12 × 3 = 72 m².

## Practice – Quick Maths Questions

### Test 9 — pages 29-31

**1. C**
A cuboid has six rectangular faces.

**2. 103.3**
In 103.259, the number in the second decimal place is 5, so the number rounds up to 103.3 to one decimal place.

**3. C**
The angle is a full turn minus a right angle, which is 360° − 90° = 270°.

**4. 169**
116 teas + 53 coffees = 116 + 50 + 3 = 166 + 3 = 169.

**5. 8.4 s**
The highest value is 22.6 s, and the lowest is 14.2 s.
22.6 − 14.2 = 22.6 − 10 − 4 − 0.2 = 12.6 − 4 − 0.2 = 8.6 − 0.2 = 8.4 s.

**6. C**
$20\% = {}^{20}/_{100}$. ${}^{20}/_{100} = {}^{(20\div20)}/_{(100\div20)} = {}^{1}/_{5}$.

**7. 243**
Each term is three times the previous term. So the missing term is 81 × 3 = 80 × 3 + 3 = 240 + 3 = 243.

**8. D**
1 m = 1000 mm, so 20000 mm = 20 000 ÷ 1000 = 20 m.

**9. 21 m**
The horizontal side lengths add up to 2 × 7.5 = 15 m.
The vertical side lengths add up to 2 × 3 = 6 m.
So the total perimeter must be 15 + 6 = 21 m.

**10. E**
B and D are even, so they must have 2 as a factor. A ends in 5 so it must have 5 as a factor). C is 57, which is 30 + 27 — both of these are multiples of 3, so 57 must have 3 as a factor. That leaves option E, 59, which is prime.

**11. 0.4 m**
The mean of the six numbers is 0.5 m, so the sum of the six numbers must be 6 × 0.5 = 3 m. The values given add up to 0.3 + 0.1 + 0.7 + 0.9 + 0.6 = 2.6 m. So $n$ = 3 − 2.6 = 0.4 m.

**12. D**
Add up the heights of each bar to find the total number of pupils in class 4B: 6 + 10 + 5 + 3 + 1 = 25 pupils.
Of these, 3 + 1 = 4 pupils take more than half an hour (30 minutes) to travel to school.
${}^{4}/_{25} = {}^{(4\times4)}/_{(25\times4)} = {}^{16}/_{100}$ = 16% of the pupils.

**13. 20**
$9^2 = 81$, $6^2 = 36$ and $5^2 = 25$.
81 − (36 + 25) = 81 − 61 = 20.

**14. D**
For a fraction to be equivalent to ${}^{3}/_{7}$, it must cancel down to ${}^{3}/_{7}$ when top and bottom are divided by the same number. This only works for D: ${}^{9}/_{21} = {}^{(9\div3)}/_{(21\div3)} = {}^{3}/_{7}$.

**15. 8**
Putting the values for $b$ and $c$ into the equation:
$3a - (12 \div 2) + (2 \times 9) = 6 + 18 = 24$. So $a = 24 \div 3 = 8$.

**16. 100°**
One angle in the parallelogram lies on a straight line with the 80° angle, so it must be 180 − 80 = 100°. The angles in a parallelogram add up to 360° and there are two equal pairs of angles. Sum of 1st pair of angles = 100 + 100 = 200°. This leaves 360 − 200 = 160° for the 2nd pair of angles, so each one is 160 ÷ 2 = 80°. Angle $k$ lies on a straight line with one of the 2nd pair of angles, so $k$ = 180 − 80 = 100°.

**17. A**
There are 60 ÷ 4 = 15 minutes in ${}^{1}/_{4}$ of an hour, and 60 seconds in a minute. 15 minutes × 60 = (10 × 60) + (5 × 60) = 600 + 300 = 900 seconds.

**18. 3568**
To make the smallest number possible, you need to use the smallest digit in the column with the highest value. So use the 3 for the thousands first, then the next smallest (5) for the hundreds, then the next smallest (6) for the tens, and finally the 8 for the units.

**19. 0.837**
Use column addition (making sure that the decimal points line up):

$$\begin{array}{r} 0.247 \\ 0.040 \\ +\ 0.550 \\ \hline 0.837 \end{array}$$

**20. 44 m³**
The shape can be split up into two cuboids, one on top of the other each with a volume of length × width × height.
The top cuboid has a volume of 4 × 1 × 1 = 4 m³.
The bottom cuboid has a volume of 4 × 5 × 2 = 40 m³.
So the total volume = 4 + 40 = 44 m³.

**21. 3**
Do the bit in brackets first: $16 \times {}^{3}/_{4} = {}^{16\times3}/_{4} = {}^{48}/_{4} = 12$.
Then do the division: 12 ÷ 4 = 3.

**22. D**
When a point is moved 2 units left, the $x$-coordinate will decreases by 2. So it will become $x - 2$. When a point is reflected in the $x$-axis, the $y$-coordinate becomes negative. So it will become $-y$.

# English – Comprehension

## Core English Skills – Inference

# Inference Skills Worksheet **Answers**

**Question 1**

a. What do you think the recent weather has been like where the children live?

**The passage refers to a patch of blue sky fighting the grey. Answers should be based around the weather not being very good, wet, rainy, etc.**

b. How do you think the children are getting to school?

**Answers may vary and include - walking or biking to school with their dad.**

c. What is the meaning of 'a bright day?'

**A sunny day, lots of sun and sunshine. Sun makes people's moods feel bright or happy.**

**Question2**

a. What does the weather seem like this evening?

**Answers may vary but should be based on the weather being fine, clear or warm (the sky is clear, stars are evident and short-sleeved clothing is worn).**

b. What do you think they are cooking on the fire?

**Answers may vary, and past experiences may influence answers. Some ideas may include marshmallows, sausages, hotdogs, smores or other foods that could be cooked on a stick over an open fire.**

c. Where do you think they will get their water from?

**They may have hiked in with it, or water may come from a river or stream nearby.**

d. How did they get to the camping spot?

**Answers will vary but may include driving to a certain point and then hiking to the campsite.**

**Question 3**

Answer **B - She was quite nervous and did not want to open the door quickly.**

**Question 4**

Answer **C - She missed her younger brother, who was away at school camp.**

## Comprehension Practice

### Test 4 - Black Beauty

| Question | Answer | Source of Answer |
|---|---|---|
| 1 | C | Refer to line 1: 'The first place that I can well remember was a large pleasant meadow...' |
| 2 | C | Reader's logical inference required. Refer to specific sentences and phrases within the text such as '...I lived upon my mother's milk, as I could not eat grass.' (line 7) and '...we used to gallop...' (line 15) to make a decision as to what the narrator is likely to be. From these, it can be inferred that the narrator is a horse. |
| 3 | D | Reader's personal judgement required. Refer to the phrase '...I ran by her side, and at night I lay down close by her.' (line 8) to help form an opinion as to the nature of their relationship. This description gives the impression that the two horses were close. |
| 4 | D | Knowledge of vocabulary required. The word 'colt' means a young male horse. This can also be inferred from the sentence 'There were six young colts in the meadow besides me; they were older than I was; some were nearly as large as grown-up horses.' (lines 13-14), as this implies that colts grow up to become horses. |
| 5 | E | Refer to lines 16-17: 'Sometimes we had rather rough play, for they would frequently bite and kick as well as gallop.' |
| 6 | C | Reader's logical inference required. Refer to the section of his mother's speech in which she talks about the colts, lines 20-22, to make a decision as to what her message was. From the phrases '...they are cart-horse colts...' (line 21) and 'You have been well-bred...' (line 22), her message can be summarised as 'He is different to them.' |
| 7 | D | Reader's personal judgement required. Refer to lines 30-31 to help form an opinion as to why the master called her 'Pet'. As the 'master thought a great deal of her' (line 30) and 'Pet' is a name that is often used as an affectionate nickname, it can be inferred that the master was being affectionate. |
| 8 | A | Reader's personal judgement required. Refer to the quoted sentence in lines 39-40 and the paragraph in general to help form an opinion. Line 35: "..my mother loved him very much...she would neigh with joy.." so the best option is that she was fond of him and enjoyed pleasing him. |
| 9 | A | Reader's personal judgement required. Refer to lines 41-45 to help form an opinion as to how the narrator felt about Richard. The best option is that he found him annoying as Richard would throw stones and sticks that would hit and hurt the colts. |
| 10 | C | Reader's logical inference required. Refer to lines 47-53 to make a decision as to why the master gave Richard 'such a box on the ear' (lines 48-49). As the master said "bad boy! To chase the colts." (line 51), the best option is that he was angry with him. |
| 11 | A | Reader's personal judgement required. Refer to the description in lines 57-58 to help form an opinion as to what atmosphere is created. The phrase '...a light mist still hung over the woods...' (line 58) is most likely to create suspense. |
| 12 | D | Reader's logical inference required. Refer to lines 81-82 to make a decision as to what is likely to happen next. The phrase '...making straight for our meadow...' (line 82) implies that the dogs are likely to chase the hare into the horses' field. |
| 13 | C | Reader's personal judgement required. Refer to the last paragraph to help form an opinion as to which of the given options provides the best description of the ending. As the story is left in the middle of the action, the best option is 'exciting and unresolved'. |
| 14 | B | Knowledge of grammar required. As the pronoun 'I' and the possessive pronoun 'my' are used throughout the passage, it is written in 1st person narrative. The narrator also frequently gives opinions such as '...I think we were his favourites' (line 39). |
| 15 | B | Reader's personal judgement required. Look at the text as a whole to help form an opinion as to who are the intended readers. The language is likely to be too advanced for infants, yet the themes of the book are likely to be too immature for teenagers. Therefore, children are the intended readers. |

# Verbal Reasoning

## Verbal Reasoning Tests

### Paper 1 (pages 1–5)

1 The **visitors** to the museum stood in the **queue**.
2 **She** had **not** packed any lunch.
3 Most **dogs** like **bones**.
4 I ran upstairs **to** **get** my book.
5 **He** jumped **out** of the tree.
6 **vanish** 'Appear' means to become visible, so 'vanish', which means to disappear, is the most opposite in meaning.
7 **noisy** 'Silent' means without sound, so 'noisy', which means loud, is the most opposite in meaning.
8 **descend** 'Rise' means to go up, so 'descend', which means to go down, is the most opposite in meaning.
9 **fancy** 'Plain' means lacking in decoration or adornment, so 'fancy', which means highly decorated, is the most opposite in meaning.
10 **solid** 'Runny' means in a liquid state, so 'solid', which means of definite shape and not liquid or gaseous, is the most opposite in meaning.
11–15 Category A contains words to do with animals **(cheetah, weasel)**
Category B contains words to do with fruit **(kiwi, satsuma)**
Category C contains words to do with sport **(rounders, lacrosse, badminton)**
Category D contains words to do with fish **(trout, plaice, salmon)**
16–20 To complete this type of question, try the first word from the first set of brackets with each word in the second set of brackets. Repeat this method with the second and third words from the first set of brackets, until you find the correct combination. It also helps to write the word combinations down for this type of question.
16 **anteater**
17 **laptop**
18 **needless**
19 **friendship**
20 **broadcast**
21 **guess, suspect** Both words mean to 'speculate'.
22 **option, choice** Both words mean to 'have the ability to choose'.
23 **diminish, lessen** Both words mean to 'reduce' or 'decrease'.
24 **ruler, controller** Both words describe someone who is in charge of others.
25 **job, task** Both words mean a 'project' or 'chore'.
26 **Tennis** is the most popular sport. A table is the easiest way to sort the information, like this:

| | Tennis | Football | Swimming |
|---|---|---|---|
| Aiden | ✓ | | |
| Beth | | ✓ | ✗ |
| Chloe | ✓ | ✓ | ✗ |
| Daxa | ✓ | | ✓ |

27–29 This is BIDMAS (Brackets, Indices, Division, Multiplication, Addition, Subtraction). Complete the equation in the brackets first, then complete the rest of the sum.
27 **B** $(6 - 4) \times 2 = 2 \times 2$ which is 4
28 **C** $6 + 4 - 5 = 10 - 5$ which is 5
29 **A** $(2 \times 4) \div 4 = 8 \div 4$ which is 2
30–33 Give two marks for each correct crossword.
30–31

| | | | | |
|---|---|---|---|---|
| A | N | G | E | L |
| L | ■ | R | ■ | A |
| E | N | A | C | T |
| R | ■ | C | ■ | C |
| T | E | E | T | H |

32–33

| | | | | |
|---|---|---|---|---|
| C | A | N | O | E |
| R | ■ | I | ■ | A |
| E | I | G | H | T |
| S | ■ | H | ■ | E |
| S | A | T | I | N |

34 **KL** Each letter in the first pair moves forward by two places in the second pair.
35 **ON** The first letter in the first pair moves forward by two places in the second pair; the second letter moves back by one place.
36 **GK** The first letter in the first pair moves back by three places in the second pair; the second letter moves forward by three places.
37 **CE** Each letter moves forward by one place.
38 **XU** This is a mirror pair, where the letters are an equal distance from the centre of the alphabet (imagine a mirror line between 'M' and 'N'). AD is a mirror pair to ZW, so CF is a mirror pair to XU.
39–43 Place the letters of the word below or above the symbols to make coding and decoding easier:

| H | O | M | E | W | R | K |
|---|---|---|---|---|---|---|
| * | ^ | % | £ | ! | ~ | # |

39 **% ^ ~ £**
40 **! ^ ~ %**
41 **% £ £ #**
42 **! * £ ~ £**
43 **~ ^ ^ %**

EXPANDED ANSWERS

*Bond Verbal Reasoning Assessment Papers 10–11+ years Book 2*

44–49 These types of questions will need to be read more than once, as the information is not always given in the order you need to work it out in. Begin with James, who is the oldest. Next put in Kate (4th oldest – 'older than just two children'), then Omar ('older than Kate, but younger than Laura", so 3rd oldest) and Laura (older than Omar, so 2nd oldest). As Kate is older than two children and Eva is not the youngest, the final two must be Eva (5th oldest) and Jacob (6th / youngest child).

44 **James**
45 **Laura**
46 **Omar**
47 **Kate**
48 **Eva**
49 **Jacob**

50–54 Look at the numbers that are next to one another in the question. They will have been either been added to, subtracted from, multiplied or divided to get to the next number in the sequence. Sometimes there may be two sequences which alternate in a question: the first, third and fifth numbers follow one sequence and the second, fourth and sixth follow another.

50 **14, 18** The sequence is -3, +4, - 3, +4 etc. (16, 13, 17, 14, 18, 15)
51 **24, 48** Each number in the sequence is multiplied by 2 (3, 6, 12, 24, 48, 96)
52 **6, 9** The sequence is +1, +2, +1, +2 etc. (2, 3, 5, 6, 8, 9)
53 **9, 27** The number added increases by 1 each time: +2, +3, +4, +5 etc. (7, 9, 12, 16, 21, 27)
54 **2, 15** There are two sequences which alternate. In the first sequence, starting with 5, the numbers increase by 5 each time (5, 10, 15). In the second sequence, starting with 1, the numbers increase by 1 each time (1, 2, 3).
55 **t** post, trip
56 **m** worm, moan
57 **t** wart, thaw
58 **e** lice, ease
59 **d** herd, damp

60–64 To complete this type of question, write the letters that have not changed into the space provided for the answer. You can then try changing each of the remaining letters to form a new word. For example:
CASE __AS__ LASH
CASH must be the answer as LASE is not a word.

60 **STEP**
61 **LIVE**
62 **DEER**
63 **BAIL**
64 **GRAB**
65 **about** 'Regarding' and 'concerning' can both be replaced by the word 'about' as can 'roughly' and 'nearly'.
66 **open** 'Unlocked' and 'unfastened' can both be replaced by the word 'open' as can 'start' and 'launch'.
67 **snap** 'Snap' is another word for 'break' or 'crack' and can describe an attack by an animal..
68 **faint** 'Faint' can mean the same as 'faded' and 'dim', but can also be used as a verb meaning to 'collapse' or 'black out'.
69 **cross** Someone who is 'annoyed' or 'grumpy' can be said to be 'cross', whilst a 'cross' is also a shape, as are 'circles' and 'squares'.
70 **Chairs can be made of wood.** For this question you can only judge what must be true based on the given information. Only 'Chairs can be made of wood' must be true as chairs are furniture, which is made out of wood.

71–75 For this type of question it helps to place your fingers over most of the letters, so that only four letters can be seen. Carefully work along the sentence in this way to find the hidden four-letter word. It is worth noting that the pronunciation of some letters might change.

71 **wand** If you blo**w and** blow the candle will go out.
72 **hear** T**he ar**gument began when Laurie took Jenna's phone.
73 **chop** Ea**ch op**ponent must weigh in first.
74 **done** Will you help me fin**d one** that isn't broken?
75 **test** The rabbits stayed qui**te st**ill as we passed.
76 **notice** There is no 'c' in 'digestion'.
77 **nineteen** There are only two 'e's in 'intensive'.
78 **dated** There is only one 'd' in 'underneath'.
79 **hurry** There is only one 'r' in 'Thursday'.
80 **drawer** There is only one 'r' in 'answered'.

## Paper 2 (pages 5–9)

1–5 Refer to Paper 1 Q50–54 on how to complete this type of question.

1 **56, 28** Each number in the sequence decreases by 7 (63, 56, 49, 42, 35, 28)
2 **16, 128** Each number in the sequence is multiplied by 2 (4, 8, 16, 32, 64, 128)
3 **17, 13** Each number in the sequence decreases by 2 (19, 17, 15, 13, 11, 9)
4 **17, 24** The sequence is +2, +3, +2, +3 etc. (12, 14, 17, 19, 22, 24)

## Understanding Language in the Text

## Multiple Logic Statements

### PAGE 24 - UNDERSTANDING THE LANGUAGE IN THE TEXT

1. **A -** *The word 'muttered' gives the impression that the soldier is annoyed.*
2. **B -** *This comparison tells you that the grappling hook moves quickly because rockets move very quickly.*
3. **C -** *'Clanged' is onomatopoeic so it helps you imagine the noise.*
4. **A -** *The image of a dagger is frightening so it makes the speaker sound dangerous.*
5. **A -** *The man is exaggerating - the wall cannot be a mile high.*
6. **C -** *The man is being ironic - to overpower a few hundred guards' (line 6) would not be easy.*

### PAGE 25 - MULTIPLE-STATEMENT QUESTIONS - LOGIC

1. **C -** *April came third, Hamish came first and Sandy got more right than April, so Sandy must have come second. Kai was not last, so he must have been fourth, so Drew must have come last.*
2. **C -** *If each person tosses the coin three times, the coin will be tossed a total of 15 times. Because there is an odd number of tosses there cannot be an equal number of heads and tails.*
3. **D -** *Rich came second, and Amir finished before him, so Amir must have come first. Wanda finished after Sam, so she must have come either fourth or fift;h. You know Tom didn't finish last, so Wanda must have finished last.*

# Non -Verbal Reasoning

## Test 8 Answers

### Section 1 : Odd One Out

***Q1*** (e) : arrow line goes over the grey outline of the figure
- random shapes with black diamond, white circle and a letter inside – nothing odd about that
- arrow always points out of shape – can be clockwise or anti-clockwise – not odd
- arrow goes under outer shape except in (e) so answer = (e)

***Q2*** (b) : symbols in left and right columns are level
- 2 columns of symbols – always same symbols top – mid & bottom but can be either side
- left column above right or below – on same level in (b)
- can't see any obvious combinations of symbols so figures aligned in (b) makes it the answer

{if you think your answer's a bit weak then it's worth checking for something stronger}

***Q3*** (b) : figure not divided into 2 equal halves
- various figures divided into 2 sections with different shading
- don't see anything odd about the shading
- symmetry – line marking the 2 sectors is a line of symmetry except in (b) so answer = (b)

***Q4*** (c) : flag is at the front
- boats – 3 point left, 2 right; 2 have 3 portholes, 3 have 4; 3 have 3 funnels, 2 have 2
- flags – flag's at the front in (c) so answer = (c)

***Q5*** (d) : mirror image of the others
- same shape – not outlines & not dot colour – both split 2 & 3
- look at shapes again – is it mirror images?
- if you turn them so long side is at the bottom then the point is to the right in (a) (b) (c) & (e)
- (d) is a mirror image of the others so answer = (d)

{with a simple shape you may prefer to spot the mirror image this way}

***Q6*** (c) : shading lines are not as close together
- simple – the shading lines are too far apart in (c) so answer = (c)
- make sure it really is that simple – think so

***Q7*** (b) : number of shapes equals number of sides, shading not important
- bunch of regular polygons with rectangles inside – it's going to be a numbers question
- write down number of sides, rectangles & shaded rectangles next to each figure
- number of rectangles always more than sides except in (b) where it's equal
- shading not important, so answer = (b)

***Q8*** (d) : squares equal circles (container not relevant)
- all are regular polygons with black squares and white circles inside
- must be another numbers question so write down sides, squares and circles
- squares and circles always different except in (d) where they're equal so answer = (d)

***Q9*** (e) : small figures at opposing points of star should be 180° rotated or flipped
- stars all the same - colours split 2 to 3
- opposite symbols match but opposite directions - not in (e) so answer = (e)

***Q10*** (d) : polygon has fewer sides than star has points
- polygons and stars – outlines and shading don't look very odd
- count sides and points & write down the numbers
- 1 more side than star has points except in (d) where it's the other way – so answer = (d)

***Q11*** (b) : has 2 diamonds instead of 2 trapezoids (simplest is always correct)
- stacks of 5 shapes – can't see anything odd along any row
- always 1 oval & 1 onion and 1 or 2 diamonds and flower pots
- it's always 2 flower pots except in (b) which has 2 diamonds

{In complicated figures there's usually something else which might make one of them the odd one out but simplest is always best, you won't get a mark for anything else}

***Q12*** (d) : number of circles not one more than number of lines at base
- looks like a numbers question so get counting and write down the numbers
- circles always one more than lines at base except (d) which is 2 more – answer = (d)

***Q13*** (b) : black end of line is in the circle
- circle & square connected by a line with shapes at both ends – not size or orientation
- all lines all have a black end and a white end – nothing odd
- circle always has white end except in (b) – answer = (b)

{If you happened to see that straight away, look around for something more obvious}

***Q14*** (a) : flipped across the diagonal; others displaced then flipped
- it's not the dots in the middle – 2 black, 3 white
- how do the corner shapes relate – (a) is symmetrical, (b) is close but not quite
- with (b) to (e) you move the shapes to the mid line then they're H-flips
- not so with (a) (have to rotate) so answer = (a)

***Q15*** (d) : opposite squares have different shading
- centre shapes all differ so nothing odd there
- all have got a plain colour (white or grey) opposite and another 2 line shaded
- opposing shading always the same except in (d)

***Q16*** (a) : triangle is a mirror image of the others, symbols not important
- all right angled triangles with the same 3 figures inside
- no corner has 4 the same symbol; order - all same
- is it the triangle? – yes; (a) is a mirror image of the others

## Section 2 : Analogies

***Q1*** (e) : bold shape becomes normal with horizontal shading; dotted copy outside
- original shape gets a normal outline with horizontal shading – rule out (b) & (c)
- (d) was upside down – didn't want that – leaving (a) & (e)
- compare them – outer shape should be dotty copy of original – answer = (e)

***Q2*** (b) : black triangle turns into a triangle of white triangles
- black square gives 4 black squares at the corners – look for white triangles – rule out (a)
- only (c) has 4 but not at the corners so no good – think again
- a black 4 sided figure gives 4 white copies – triangle will give 3 triangles – rule out (c)
- look for 3 triangles – all have but 1 is sideways in (e)
- compare (b) & (d) – could be (d) if they flipped but (b) is simpler so answer = (b)

{if there is a choice like this then choose the option involving the fewest steps}

***Q3*** (d) : centre symbol moves to corners, alternating black & white
- looks like the last one but it's not – centre goes to each corner of outer shape
- look for right facing chevron with diamond at each corner – rule out (b) & (c)
- diamonds should alternate black & white – rule out (a)
- compare (d) & (e) – (e) is circles not diamonds, answer = (d)

***Q4*** (a) : figures rotate 180º; top figure becomes bottom; other figure becomes dashed
- main figures have rotated 180º (not flipped) – rule out (c)
- black ball rotates with figures – should be top right – not (d) & (e)
- compare (a) & (b) – underneath figure should now be on top & dashed – answer = (a)

***Q5*** (e) : figures and their contents rotate 180º
- outer figures have rotated 180º (not flipped) – all OK
- contents rotate with figures – stick at bottom of oval with dot at right – rule out (a) (b) & (d)
- compare (c) & (e) – triangle should point down so answer = (e)

***Q6*** (b) : swap shading; outer shading 90º rotated from inner
- figures stay the same – rule out (c) & (e)
- shading swaps – want shaded outer & white inner – all OK
- actually shading isn't the same – it rotates 90º need vertical shading so answer = (b)

***Q7*** (a) : triangle and outer shape rotate 90º anti-clockwise; other shape 90º clockwise and goes bold.
- outside figure has rotated 90º anti-clockwise but keeps its outline – rule out (b) & (d)
- triangle also rotates 90º anti-clockwise– rule out (c) (e)
- check other line figure – 90º clockwise & bold – answer (a)

***Q8*** (d) : whole figure rotates 180º & shading swaps
- whole figure has rotated 180º – look for oval top right on left diagonal – rule out (a) & (e)
- look at line figure – (c) hasn't rotated
- compare (b) & (d) – don't want black shading so answer = (d)

***Q9*** (e) : rotation of shading 3 segments anti-clockwise (grey rotated to missing segment)
- missing segment stays still – rule out (c)
- black & V-shade rotate 3 segments anti-clockwise while grey disappears (or goes to missing segment)
- black should be top right rule out (a) & (b)
- compare (d) & (e) – V-shading can't be bottom left – if grey moves 3 then it is bottom left as in (e)
- where is the V-shading in (e) – 3 anti-clockwise puts it in the missing segment so it disappears – answer = (e)

{ complicated –if you don't see it don't spend ages on 1 question – put down a guess and return at the end if you have time }

***Q10*** (d) : quadrilateral gets sharp corners; central figure rotates 180º; outer figures swap colours
- rounded figure gets sharp corners so rule out (b)
- central figure H-flips – rule out (e)
- outer symbols swap colours but not places – rule out (a)
- compare (c) & (d) – 6 point star in (c) so answer = (d)

***Q11*** (b) : 180º rotation
- outer rotates 180º –bite at bottom left – rule out (a) & (c)
- inner shapes have rotated –square top right – rule out (e)
- compare (b) & (d) – K is flipped, not rotated in (d)

***Q12*** (d) : large copy of lower right figure with fill of lower left, outline of top
- bottom right symbol enlarges and goes to centre – rule out (b) & (e)
- shading of bottom left goes to centre – should be white – rule out (c)
- compare (a) & (d) – top outline goes to centre, answer = (d)

{could say centre has outline of bold figure, shading of shaded & shape of the other but there is no bold left shaded star so that logic fails }

***Q13*** (c) : 90º clockwise rotation; black white swap
- there's a rotation and a colour swap of the inner figures
- rotation is 90º clockwise – empty point will be lower left so rule out (b)
- point anticlockwise from empty one will have a white – rule out (a & (e)
- compare (c) (d) – most central ball will be white as in (c)

***Q14*** (e) : rotate 90º anti-clockwise then change pencils to lines with diamonds at non-tip end
- 5 pencils become 5 diamond lines – diamonds are at the opposite end to the points
- can rule out (a) (squares) & (d) (4 lines)
- figure rotates 90º anti-clockwise – rule out (b) (wrong end) & (c) (flipped) so answer = (e)

***Q15*** (a) : 2 black at bottom to 1 white at top; other figure rotates 90º clockwise
- 2 blacks at bottom become 1 white at top – rule out (d) and (e) (diamond)
- other figure rotates 90º clockwise – (b) is a flipped version (c) is anti-clockwise so answer = (a)

***Q16*** (c) : outer becomes centre with left diagonals; centre shape separates vertically into 2 with right diagonals

- inner figure breaks apart vertically – rule out (a) (rounded)
- outer is reduced & goes to centre of figure – rule out (b)
- outer right shaded – rule out (e)
- compare (c) & (d) – inner should be left shaded, answer = (c)

**Section 3 : Series**

***Q1*** (c) : new horizontal each time; bottom symbol alternate black dot

- top bit shouldn't change – rule out (a) & (e)
- there's a new horizontal each time – need 4 – all OK
- pattern should be as top 4 from 5th – rule out (d)
- compare (b) & (c) – dot at bottom alternates so answer = (c)

***Q2*** (b) : diamond grows; octagon alternates thick grey & thin black outline

- outline alternates – don't want the thick grey one anywhere so rule out (c) & (e)
- inner is growing while outer stays the same – inner will be a bit bigger than octagon
- octagon has shrunk in (d) & diamond is rotated in (a) so answer = (b)

***Q3*** (e) : 1 less dot; 1 less line; 1 more square alternating black & white

- obviously numbers – want 5 squares at top with white at left – rule out (b)
- want no dots at bottom – rule out (c)
- centre is lines 5 – 4 – 3 – 2 : need a single line – answer = (e)

***Q4*** (a) : + goes 1 2 3 4 5; cross goes 3 3 2 2 1; square goes 1 2 2 3 3

- more numbers – count crosses, squares and +'s and write down the numbers
- + goes ? 2 3 4 5 – must be 1 wanted so rule out (c)
- squares go ? 2 2 3 3 – must be 1 wanted so rule out (e)
- crosses go ? 3 2 2 1 – must be 3 wanted so rule out (b)
- compare (a) & (d) – rotated crosses in (d) so answer = (a)

***Q5*** (b) : large circle alternates layers with vertical lines; black dot moves 90° clockwise

- notice immediately that (c) is hopeless so rule that out
- large circle alternately goes to the back – need it at the back so rule out (e)
- follow dot from right to left (5th to 3rd) – anti-clockwise 90° – should be at right so not (d)
- compare (a) & (b) – dot should be in the inner circle so answer = (b)

***Q6*** (d) : rotates 60° anti-clockwise; overlaps vary in sequence

- arrow rotates anti-clockwise – should be pointing lower right – rule out (b) & (e)
- base varies in sequence – 4th is like 1st so we need like 2nd – only (d) works so answer = (d)

***Q7*** (b) : 1 ball goes anti-clockwise & changes colour

- (c) is back to front so get rid of that one
- 1 ball goes from top to bottom – need 4 top & 3 bottom – not (d)
- ball that moves changes colour - black white black at bottom – rule out (e)
- compare (a) & (b) – colours at top – should be white at end so answer = (b)

***Q8*** (a) : 3 circles move across oval window (not visible when outside); black bar moves clockwise round oval track

- follow black bar 5th to 3rd – anti-clockwise ~ 90° – should be bottom right – not (c) or (d)
- from 4th to 2nd the balls move a bit left – 3rd is in middle so 1st will be a flip of 5th – not (e)
- compare (a) & (b) – (b) not moved far enough and has another ball at right to answer = (a)

{unusual series – like looking through a window at things moving past outside}

***Q9*** (e) : upper ball moves clockwise by 1; lower moves anti-clockwise by 2 - coincide in 3rd frame

- moving balls – top moves 1 place clockwise – should be at 1-o-clock – rule out (c) (white)
- bottom moves 2 places anti-clockwise – should also be at 1-o-clock – rule out (a) & (d)
- compare (b) & (e) – look the same – count – need 11 so answer = (e)

***Q10*** (c) : figure rotates 60° anti-clockwise; centre alternates black / white

- centre alternates colour – need black so rule out (b) & (a) has a square
- outers rotate a bit less than 90° anti-clockwise – black at top right – rule out (e)
- compare (c) & (d) – 1 arrow points out in (d) so answer = (c)

{rotations are hard to be precise about when they're not 45° or 90°}

***Q11*** (c) : main figure 60° anti-clockwise; dot alternates colour & rotates 90° anti-clockwise relative to its container

- point shouldn't be black - rule out (b) - dot alternates colour – need white so rule out (e)
- point moves anti-clockwise – should point down (between 3rd & 5th) – rule out (a)
- compare (c) & (d) – dot moves 25 minutes anti-clockwise
- dot should be at quarter to – answer = (c)

{it is sometimes easier to view the dot as tracking the hands of a clock}

***Q12*** (e) : rotates 45° clockwise & loses a V while bar shortens & swaps shading

- deal with the rotation first – 45° clockwise – should be horizontal pointing up – rule out (b)
- gets shorter & loses an inner V – none left in 5th – all OK
- bar alternates shading – should be black to right – not (a)
- outers should point inwards – only (e) fits so answer = (e)

***Q13*** (d) : diamond series increase by 1; polygons alternating series 5 6 4 7 3

- diamonds increasing by 1 so 1 in 1st – rule out (b)
- going from 5th to 1st, polygons are 3 7 4 6 which is +4, -3, +2 so we want minus 1
- losing a side from the hexagon gives a pentagon so rule out (c) & (e)
- compare (a) & (d) – should be regular polygon, answer = (d)

{don't often see a number series like this but not difficult if you write the numbers down}

***Q14*** (a) : figure rotates 2 anti-clockwise; missing segments behind the grey increase by 1

- grey rotates anti-clockwise by 2 – should be at 8 to 9-o-clock – rule out (c) (d) & (e)
- compare (a) & (b) – should be 2 missing sectors so answer = (a)

***Q15*** (d) : figures rotate anti-clockwise round corners; doubles on left diagonal corners; bold on right diagonal corners

- figures on left diagonals are always pairs – rule out (b)
- hearts go anti-clockwise round corners – will be a single heart at top right – rule out (a)
- circles do the same – need 2 circles at bottom right – only (d) fits so answer = (d)

***Q16*** (c) : circles add 1; outlines alternate; polygons repeating sequence 4 5 6, 3 4

- circles at bottom increase – need 4 so rule out (e)
- polygons go 4 5 6 ? 4 sides – could be 3, 5 or 7 but not 4 so rule out (a)
- 2nd is dotty so 4th should be – only (c) fits so answer = (c)

{a number sequence like this has lots of options so don't fix on just one of them}

## Section 4 : Codes

***Q1*** (e) : NR - 1st is shading; 2nd is shape

- 2 N's as 1st letter, goes with shading. Unknown is white so 1st letter is N
- all different 2nd letters – shapes all different. Unknown is parallelogram so 2nd is R
- answer = NR = (e)

***Q2*** (b) : SVF - 1st is inner shape; 2nd is presence of outer; 3rd is inner shading

- 2 K's as 1st letter – goes with inner shape. Unknown is flower pot so 1st letter is S
- 2 Y's 2 V's as 2nd letter – goes with presence of outer shape – 2nd letter will be V
- 2 F's 2 Z's as 3rd letter – goes with inner shading – unknown is white so 3rd letter is F
- answer = SVF = (b)

***Q3*** (d) : JH - 1st is missing diamond; 2nd is square colour

- all different 1st letters so leave for now
- 2 L's as 2nd letter goes with square colour – unknown is black so 2nd letter is H
- 1st letter must be the missing diamond – unknown lacks bottom diamond – new letter
- answer = (new) H; JH is the only possibility so answer = (d)

***Q4*** (d) : PT - 1st is size; 2nd is centre circle

- 2 F's as 1st letter – goes with oval size. Unknown is big so 1st letter is P
- 2 S's as 2nd letter – goes with inner circle. Unknown has no inner circle so 2nd letter is T
- answer = PT = (d)

***Q5*** (a) : GY - 1st is direction; 2nd is shading

- all different 1st letters so leave for now
- 2 E's as 2nd letter – goes with shading – unknown is white so 2nd letter is Y
- 1st letter must be direction – unknown points left so 1st letter is a new letter
- answer = (new) Y; GY is the only possibility so answer = (a)

***Q6*** (c) : RG - 1st is outer size; 2nd is inner shape

- 2 R's, 2 T's as 1st letter – goes with outer size. Unknown is small so 1st letter is R
- all different 2nd letters – inners all differ. Unknown is like bottom one so 2nd letter is G
- answer = RG = (c)

***Q7*** (e) : FV - 3 shapes, 3 shadings could be ?K or F?. FV = 1st is shading; 2nd is shape

- no shared letters at all – both must code for something that varies but won't know which
- we have 3 shapes and 3 shadings but don't know which letter codes for which
- if 1st letter is shape then unknown will be a new letter
- if shape is 1st letter then 2nd is shading & unknown will be K
- only 1 with K 2nd is RK but R isn't a new letter so that won't work
- let's imagine 1st letter is shading – unknown will then be F as 1st letter
- If 1st letter is shading then 2nd is shape & unknown will be a new letter as 2nd letter
- answer would then be F (new). FV works so answer = (e)

{can be confusing when you can't tell what codes for what – you just have to try all possibilities and rely on the available answers to tell you which is right}

***Q8*** (a) : DJ - 1st is black ball; 2nd is orientation – lines at base not relevant

- 2 Y's as 1st letter – goes with bars at base but other 2 have different 1st letters
- must be something else - which dot is black. Unknown at left of arrow so 1st is D
- 2 Z's as 2nd letter – goes with direction. Unknown points down so 2nd letter is J
- answer = DJ = (a)

{look out for features in the other figures which contradict your first thoughts}

***Q9*** (c) : HK - 1st is lower shape; 2nd is upper shape (ball not coded)

- 2 C's as 1st letter – goes with lower square –unknown lower is triangle so 1st letter is H
- 2 N's as 2nd letter – goes with upper semi-circle – unknown has square so 2nd letter is new
- answer = H (new) so answer = HK = (c)

***Q10*** (a) : SD - 1st is outer shading; 2nd is inner diamond shading

- 2 E's as 1st letter – goes with outer shading. Unknown is grey so 1st letter is S
- 2 U's as 2nd letter – goes with inner shading. Unknown must be grey so 2nd letter is D
- answer = SD = (a)

***Q11*** (d) : MA - 1st is orientation; 2nd is black ball; white ball not coded

- 2 J's as 1st letter – goes with orientation. Unknown is down so 1st letter is new letter
- all different 2nd letters – goes with position of black dot relative to pentagon.
- Unknown bottom left (relative to 1st figure orientation) so 2nd is A
- answer = (new)A so answer must be MA = (d)

{We are looking at the dot relative to the pentagon oriented as in top figure}

***Q12*** (d) : RPC - 1st is dot position; 2nd is outer colour; 3rd is dot colour

- all different 1st letters so leave for now
- 2 P's as 2nd letter – goes with outer shading. Unknown is white so 2nd letter is P
- 2 B's as 3rd letter – goes with dot colour. Unknown is grey so 3rd letter is C
- 1st letter must be dot position. Unknown is right so 1st letter is R
- answer = RPC = (d)

***Q13*** (a) : KS - 1st is outer size; 2nd is inner shape; black diamond not coded

- 2 J's as 1st letter – goes with size. Unknown is big so 1st letter is K
- 2nd letters all different – could be black diamond position or inner squiggle
- black diamond would give new letter; squiggle gives S as 2nd letter
- there is no K-(new) answer so answer = KS = (a)

{we couldn't tell what the 2nd letter coded for so had to try both possibilities}

***Q14*** (c) : TRG - 1st is middle leaf; 2nd is left leaf; 3rd is right leaf

- 2 V's as 1st letter – goes with middle leaf – unknown has star so 1st letter is T
- 2 R's as 2nd letter – goes with left leaf – unknown is white so 2nd letter is R
- 2 G's as 3rd letter – goes with right leaf – unknown is black so 3rd letter is G
- answer = TRG = (c)

***Q15*** (c) : TM - 1st is direction; 2nd is colour combination (left / right not number of blacks)

- 1st letters all different so leave for now
- 2 P's as 2nd letter – goes with lots of things so we would have to try them all
- let's go back to 1st letters – all different – direction is the only possibility so 1st letter is T
- there's only 1 answer with T as 1st letter – TM – could leave it there
- can the 2nd letter be M? – a new letter – yes if 2nd letter is the left right colour combination
- 1st letter is direction, 2nd colour combination = T(new letter) = TM = (c)

{looks easy but this may be the hardest code question you will meet if you solve it completely. If you work through the options then you could have had P, A or (new) as 2nd letter}

***Q16*** (b) : ZK - 1st is number of big shapes; 2nd is type of shape

- 2 O's as 1st letter – goes with 1 big & 2 small – unknown is 3 small so 1st letter is Z
- all different 2nd letters – goes with shapes – unknown is diamonds so 2nd letter is K
- answer = ZK = (b)

## Section 5 : Nets

You have probably seen nets at school but never questions exactly like this– we have included them because examiners may decide to give you something completely new to see how you cope. If you struggle with them, keep an eye on the clock and make sure you have an answer for each question even if you are not sure it's right.

***Q1*** (b) : star (not rotated)

- can't have what's already there and can't have what would be on the opposite face
- white arrow & triangle would be opposite black square & triangle – rule out (a) (c) & (d)
- picture the net as a cube with black square on top
- when black triangle is right, star will be in front so answer = (b)

***Q2*** (e) : white hexagon

- black bar & white circle will be opposite X & white cross – rule out (a) (c) & (d)
- picture the net as a cube with X on top
- when cross is right, white hexagon will be in front

***Q3*** (b) : white diamond

- easy one – what does the arrow point to? – the white diamond so answer = (b)

{a figure that is asymmetric can make life easy for you}

***Q4*** (d) : white triangle (not rotated)

- arrow & heart will be opposite black square & star – rule out (c) & (e)
- picture the net as a cube with black square on top
- when star is at right, white triangle will be in front – rule out (b) & compare (a) & (d)
- white triangle should point at the black square so it will be right way up, answer = (d)

***Q5*** (a) : double circles

- diamond & arrow are opposite white oval & square – rule out (b) (d) & (e)
- picture the net as a cube with white square on top
- when white oval is right, double circles will be at front so answer = (a)

***Q6*** (d) : black square

- heart & black triangle will be opposite star & white triangle so rule out (b) (c) & (e)
- picture the net as a cube with white star on top
- when white triangle is right, black square will be in front so answer = (d)

***Q7*** (d) : white cross

- black bar & hexagon will be opposite X and black circle – rule out (b) (c) & (e)
- picture the net as a cube with X on top
- when black circle is right, cross will be in front so answer = (d)

***Q8*** (e) : white square

- double circles & diamond are opposite black oval & white oval- rule out (b) & (c)
- picture the net as a cube with black oval on top

- when white oval is right, white square will be left of white oval so answer = (e)

***Q9*** (b) : black triangle (inverted)
- another easy one – the black triangle is to the right of the heart in the net
- the heart is upside down in the cube so the black triangle will be to its left now
- heart is inverted so the triangle will be to - answer = (b)

***Q10*** (a) : black rectangle 90º rotated
- white cross & black circle will be opposite white circle & hexagon – rule out (c) & (e)
- picture the net as a cube with white circle on top
- when hexagon is right, black bar will be in front – rule out (b) & compare (a) & (d)
- black bar does not point at hexagon, it will be vertical so answer = (a)

***Q11*** (d) : black square
- white triangle & heart will be opposite black triangle & star – rule out (a) & (c)
- picture the net as a cube with black triangle on top
- when star is right, black square will be in front so answer = (d)

{perhaps it would have been easier to think the triangle points at the black square}

***Q12*** (d) : letter X (right way up)
- white cross & hexagon are opposite the 2 circles – rule out (a) & (e)
- picture the net as a cube with big white circle on top
- when black circle is right the X will be in front but which way round
- X will be the right way up so answer = (d)

***Q13*** (b) : black oval
- white oval and arrow are opposite diamond and square – rule out (a) (d) & (e)
- picture the net as a cube with white square on top
- black oval is to left of diamond so answer = (b)

***Q14*** (a) : black square
- easy one – what's at the bottom of the heart?
- the black square so answer = (a)

***Q15*** (c) : black circle
- X & white cross will be opposite black bar & white circle – rule out (a) (b) & (d)
- picture the net as a cube with white circle on top
- when black bar is right, black circle will be in front so answer = (c)

***Q16*** (c) : white square
- white diamond & black oval opposite white oval and double circles – rule out (b) (d) & (e)
- picture the net as a cube with white oval on top
- when double circles are right, white square is beneath oval so answer = (c)

# END

## Quick Lesson Recap

**1)** Round £25.36 to the nearest 10p.

**£25.40**

**2)** Round 1.3697m to the nearest hundredth metre.

**1.37m**

**3)** Armani takes 16 marbles out of a bag with 48 marbles in it, what fraction was taken out?

**1/3**

**4)** A rabbit weighed 1.2kg and then lost 480g, what does it weigh now in Kg?

**0.8kg**

**5)** A family of four share a pie. Three of them get 75, 83 and 98 degrees. What share did the fourth person get of the pie (in degrees) ?

**104**

**6)** If 83 sweets are shared between 7 people equally, how much will be left over?

6

**7)** $\frac{2}{5} + \frac{5}{15} = \frac{11}{15}$ (fill in the missing numerator)

**8)** $\frac{1}{6} + \frac{14}{18} = \frac{17}{18}$ (fill in the missing numerator)

**9)** Convert 60% into a fraction.

**3/5**

**10)** Convert $\frac{3}{8}$ into a percentage.

**37.5%**

## Homework – Vocabulary to memorise

### Vocabulary 8

Exercise A

1. Sensible
2. Precarious
3. Adverse
4. Evoke
5. Flimsy
6. Negligible
7. Overpower
8. Complacent
9. Ample
10. Ensuing

Exercise B

1. Ensuing
2. Evoke
3. Sensible
4. Overpower
5. Complacent
6. Precarious
7. Adverse
8. Negligible
9. Flimsy
10. Ample