



BROAD HORIZON
— TUITION CENTRE —

11+ Tuition – Year 5

Week 4

Answers

1) 14.1
2) 116.916
3) 8417.769
4) 28.77
5) 430.8
6) 3.017
7) 15
8) 5.182
9) 138.89
10) 316.90356
11) 9.88767
12) 1233.8766
13) 9.625
14) 7.4
15) 20.03
16) 87.001
17) 5000.0186
18) 619
19) 241.776
20) .009

Find the product.

1. $4 \times 7.1 = \underline{28.4}$

2. $2 \times 6.2 = \underline{12.4}$

3. $2 \times 1.7 = \underline{3.4}$

4. $3 \times 4.0 = \underline{12.0}$

5. $8 \times 0.09 = \underline{0.72}$

6. $5 \times 0.66 = \underline{3.30}$

7. $5 \times 0.42 = \underline{2.10}$

8. $8 \times 1.1 = \underline{8.8}$

9. $3 \times 4.5 = \underline{13.5}$

10. $4 \times 0.10 = \underline{0.40}$

11. $10 \times 3.8 = \underline{38.0}$

12. $4 \times 8.4 = \underline{33.6}$

13. $2 \times 3.3 = \underline{6.6}$

14. $4 \times 5.8 = \underline{23.2}$

15. $4 \times 0.34 = \underline{1.36}$

16. $1 \times 0.80 = \underline{0.80}$

Answers

1) 0.2

2) 0.01

3) 0.42

4) 0.02

5) 0.2

6) 0.24

7) 0.2

8) 0.81

9) 0.2

10) 0.33

11) 0.3

12) 0.9

13) 0.5

14) 0.7

15) 0.11

16) 0.27

a) 30

b) 8

c) 40

d) 20

e) 50

f) 50

g) 4

h) 3

i) 7

j) 5

k) 20

l) 2

m) 7

n) 30

o) 0.3

p) 3.6

q) 1.6

r) 0.04

STARTER TASK ANSWERS

Q1) 180°

Q2) 21

Q3) 76 CM

Q4) 140

Q5)

Mean is when you add all the values together and divide by the number of values in the set.

Q6) 770

Q7) $\frac{4}{9}$

Q8) 11.5 ($9+14=23$ $23/2=11.5$)

Q9) 804

Q10) 0.55 L

Starter task – Vocabulary Homework Test

Exercise C

1. Allege
2. Antics
3. Affluent
4. Redundant
5. Pride
6. Atrocious
7. Monarch
8. Diplomatic
9. Compulsory
10. Justification

Maths

Practice – Long Maths Word Problems

Test 7 — pages 22-24

1. 4.25 m

If a rope measures 4.3 m to the nearest 0.1 m, then it is between 4.25 m and 4.35 m. So the shortest it could be is 4.25 m.

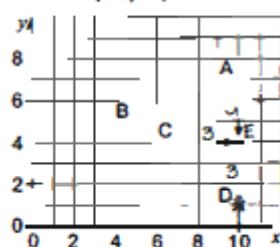
2. £20.00

$2.5 = 2 + 0.5$. $8 \times 2 = 16$, and $8 \times 0.5 = 8 \div 2 = 4$, so $8 \times 2.5 = 16 + 4 = £20$.

3. C

The distance between (0, 0) and Billy is five diagonals, which is 5×1.4 . $10 \times 1.4 = 14$, so 5×1.4 is half of this, which is $14 \div 2 = 7$ m.

4. (10, 4)



The distance between (10, 4) and each of the positions of Ann, Cris and Dai is 3 squares.

5. E

The total pastry mix is $250 + 300 = 550$ g. So each pastry case is $550 \div 10 = 55$ g. Adding 30 g of filling to each of these gives a mass of $55 + 30 = 85$ g.

6. 20

Add up the total number of journeys and divide by the number of years. $26 + 14 = 40$, $17 + 23 = 40$, so in total Layla went on $40 + 20 + 40 = 100$ journeys. $100 \div 5 = 20$ journeys.

7. 20

210 is wide enough for 4 squares, as $4 \times 50 = 200$ mm, and the 10 mm left over isn't enough to make another. 297 is long enough for 5 squares, as $5 \times 50 = 250$, and the $297 - 250 = 47$ mm isn't enough to make another. So in total Jaime can make $4 \times 5 = 20$ squares.

8. C

There are $3 \times 60 = 180$ minutes in 3 hours. So 3 hours 40 minutes is $180 + 40 = 220$ minutes. 10% of this is $220 \div 10 = 22$ minutes, so Liza ran it in 3 hours 40 mins + 22 mins = 3 hours 40 mins + 20 mins + 2 minutes = 4 hours 2 minutes.

9. 1

The first shape has 1 obtuse angle, the second also has 1, the third has 2, the fourth has none and the fifth has 4. So the most common number of obtuse angles is 1.

10. 16

$\frac{1}{13}$ of 52 is $52 \div 13 = 4$. $\frac{1}{3}$ of 36 is $36 \div 3 = 12$. So in total there are $4 + 12 = 16$ keys missing.

11. C

There are $52 - 4 = 48$ white keys remaining, and $36 - 12 = 24$ black keys remaining. So there are $48 + 24 = 72$ keys remaining. So $\frac{24}{72}$ of the remaining keys are black. This is the same as $\frac{1}{3}$.

12. C

The price of x white keys is $3 \times x$, or $3x$, and the price of y black keys is $2 \times y$, or $2y$. So in total they cost $3x + 2y$.

Test 8 — pages 25-27

1. 2:56 pm

16 minutes before 3:16 pm is 3:00 pm. $20 - 16 = 4$, so you still need to subtract 4 minutes. 4 minutes before 3:00 pm is 2:56 pm.

2. B

The smallest unit value is 5, so rule out options A and D. In the remaining three options, the smallest tenths value is 6, so rule out option E. In options B and C, the smallest hundredths value is 0, so the answer is Juniperville.

3. 12.3 km

It's 6.5 km from Cane to Pubbley, and 5.8 km from Pubbley to Grey Pond Green. So in total the distance between the two is $6.5 + 5.8 = 12.3$ km (you can use partitioning here).

4. £7.50

4384 g is the same as 4.384 kg, so rounding it up to the next whole kilogram gives 5 kg. $£1.50 \times 5 = £7.50$ (use partitioning here).

5. 25 km

Reading off the graph you can see that their total distance was 75 km. Divide this by the number of days. $75 \div 3 = 25$ km.

6. B

The downhill section starts after 45 km and ends at 75 km, so it is $75 - 45 = 30$ km long. They are walking at 3 km/h, so it takes them $30 \div 3 = 10$ hours.

7. C

Each member has 2 photos of just them, which is $4 \times 2 = 8$ photos. So $12 - 8 = 4$ photos are of the whole band. So $\frac{4}{12}$ of the photos are of the whole band, which is the same as $\frac{1}{3}$.

8. 65 cm²

The total area of 3 circles is $3 \times 25 = 75 \text{ cm}^2$. But there are two overlaps, each with an area of 5 cm^2 . So the area of the figure is $75 - 5 - 5 = 65 \text{ cm}^2$.

9. A

It doesn't matter in which order Kayleigh makes the turns. In total she turned $150 + 30 = 180^\circ$ clockwise and 90° anticlockwise. This comes out to $180 - 90 = 90^\circ$ clockwise. 90° clockwise from North is East.

10. Week 4

In Week 1 she has 15 cars. $15 - 5 = 10$, and $10 \times 2 = 20$, so in Week 2 she has 20 cars. For Week 3: $20 - 5 = 15$ and $15 \times 2 = 30$ cars. For Week 4: $30 - 5 = 25$, and $25 \times 2 = 50$ cars. 50 is more than 40, so it's in Week 4.

11. D

If he starts off with 10 and sells 5 he has $10 - 5 = 5$ cars. Doubling his stock gives $5 \times 2 = 10$ cars. So he will always have 10 cars at the start of each week.

12. A

A 10 cm cube has volume $10 \times 10 \times 10 = 1000 \text{ cm}^3$

Each 2 cm cube cut off has volume $2 \times 2 \times 2 = 8 \text{ cm}^3$. There are 8 corners on a cube, so the corners removed have a total volume of $8 \times 8 = 64 \text{ cm}^3$

Practice – Short Maths Problems

Test 4 — pages 12-14

1. **264 000**

There is a 5 in the hundreds column, so round the thousands column up to get 264 000.

2. **15**

A pentagonal prism has 15 edges.



3. **D**

3.2 kg is the most common mass because it appears 3 times in the list, more than any other value.

4. **E**

5 and 15 are the only factors of both 90 and 165 in the list, but 15 is the higher of the two

5. **30 m**

A rhombus has four sides of equal length, so the perimeter is $750 \times 4 = 3000$ cm. 3000 cm = $3000 \div 100 = 30$ m.

6. **D**

2.5 km and 2 miles are too long to be the length of a swimming pool, while 250 cm and 50 inches are too short. 25 m is the only sensible option.

7. **153**

10% of 340 = $340 \div 10 = 34$. 40% of 340 = $4 \times 34 = 136$
5% of 340 = $34 \div 2 = 17$. So 45% of 340 = $136 + 17 = 153$.

8. **55 kg**

5 kg = 11 pounds, so divide by 11 then multiply by 5 to convert from pounds to kg. $121 \div 11 = 11$ and $11 \times 5 = 55$, so 121 pounds = 55 kg.

9. **B**

Add one hour to 17:25 then take away 10 minutes to get 18:15, or quarter past six. B is the correct option.

10. **14 cm**

The area of the triangle is 49 cm² and its height is 7 cm, so $\frac{1}{2} \times \text{base} \times 7 = 49$. $\text{Base} \times 7 = 49 \times 2 = 98$. So base of triangle = $98 \div 7 = 14$ cm (use partitioning).

11. **C**

$$3.6 = 3\frac{6}{10} = 3\frac{3}{5} = 1\frac{5}{5} + \frac{3}{5} = 1\frac{8}{5}$$

12. **20**

One wheel on the pictogram = 8 bikes, so $(3 \times 8) + 6 = 30$ bikes were repaired on Wednesday and $8 + 2 = 10$ on Thursday. So $30 - 10 = 20$ more bikes were repaired on Wednesday than on Thursday

13. **9412**

Use long multiplication:

$$\begin{array}{r} 362 \\ \times 26 \\ \hline 2172 \\ 7240 \\ \hline 9412 \end{array}$$

14. **(5, 2)**

The point at (5, 2) is reflected in the y axis, so the y-coordinate is the same but the x-coordinate goes from negative to positive. The new coordinates are (5, 2).

15. **A**

$12y - 8 = 136$, so $12y = 136 + 8 = 144$, and so $y = 144 \div 12 = 12$.

16. **140**

$1260 \div 9 = (900 + 360) \div 9$
 $= (900 \div 9) + (360 \div 9) = 100 + 40 = 140$ chairs.

17. **C**

The thermometer readings are 6 °C, 12 °C and 9 °C, so the mean is $(6 + 12 + 9) \div 3 = 27 \div 3 = 9$ °C.

18. **44**

Each term is found by adding 4 to the previous term and multiplying by 2. So the 2nd term is $(5 + 4) \times 2 = 18$, and the 3rd term is $(18 + 4) \times 2 = 44$.

19. **36°**

$100 - 35 - 30 - 25 = 100 - 90 = 10$, so the white sector makes up 10% of the pie chart. Angles around a point add up to 360°, so angle $a = 10\%$ of $360 = 360 \div 10 = 36^\circ$.

20. **53**

53 and 59 are the prime numbers closest to 55. 53 is closer to 55 ($55 - 53 = 2$ but $59 - 55 = 4$).

21. **£80.20**

12 books cost $12 \times 3.75 = (10 \times 3.75) + (2 \times 3.75)$
 $= 37.50 + 7.50 = £45$. 8 CDs cost 8×4.40
 $= (8 \times 4) + (8 \times 0.40) = 32 + 3.2 = £35.20$.
So the total cost is $45 + 35.20 = £80.20$.

22. **C**

Perimeter of rectangle = $(2 \times \text{height}) + (2 \times \text{width})$.
 $2 \times \text{height} = 2 \times 3x = 6x$ m. Perimeter = $6x + 10$ m,
so $2 \times \text{width} = 10$ m. So width = 5 m.

Comprehension Practice

PAGES 54 - 61 — ASSESSMENT TEST 4

1. **B** — *Mi Nuong is lonely because "Her father kept her locked away at the top of the palace's tallest tower."*
2. **E** — *Mi Nuong sits at her window "embroidering" — this is another word for sewing.*
3. **C** — *In the passage it says Mi Nuong's father locks her in a tower "to keep her out of harm's way."*
4. **C** — *Sunlight is the only option that isn't mentioned in the passage.*
5. **B** — *The song makes Mi Nuong feel enthralled and wishful — the music is "captivating" and gives her a "glimmer of hope".*
6. **D** — *The man is fishing — he stands on a "golden fishing boat" and he has a net.*
7. **C** — *In the passage it says "Mi Nuong leaned out as far out as she could to try to catch sight of the singer" — she wants to get a better look at the man on the fishing boat.*
8. **A** — *In the passage it says "A sudden glimmer of hope lit up in her heart" and "Perhaps this man had come to release her from the tower" — she is hopeful that the man has come to rescue her.*
9. **C** — *"Forlorn" is closest in meaning to 'miserable'. It means that Mi Nuong is unhappy.*
10. **B** — *The phrase "floating on air" is an idiom which means 'to be overjoyed'.*
11. **B** — *The phrase means that Mi Nuong thinks she is meant to marry him — "destined" means the same as 'meant'.*
12. **C** — *This is a simile because the author is saying that Mi Nuong is like a moth.*
13. **A** — *"unwary" is an adjective because it is describing a noun.*
14. **B** — *"glimpsed" is a verb. It is the action word in this sentence.*
15. **B** — *In the passage it says that "She could see nothing, in fact, but a dense darkness on either side."*
16. **D** — *In the passage the only thing Mrs Medlock doesn't mention is water.*
17. **B** — *Mary feels anxious as she doesn't know anything about the moor and she says that she does not like it.*
18. **C** — *In the passage Mrs Medlock describes the moor as "wild" and that nothing grows on the moor "but heather and gorse".*
19. **B** — *Mary can only see darkness around her, which she thinks could be the sea.*
20. **E** — *In the passage it says "Mary felt as if the drive would never come to an end", and she's uncertain about where they are, which means that she is disorientated.*
21. **A** — *The author creates an unsettling mood because the moor is described as uncertain and mysterious.*
22. **D** — *This is a story so it's a fiction text.*
23. **E** — *"presently" means 'thesa meas 'before long'.*
24. **C** — *"expanse" is closest in meaning to 'area'.*
25. **A** — *"singular" is closest in meaning to 'strange'.*
26. **D** — *"beneath" is a preposition because it tells you where the water is in relation to the bridge.*
27. **B** — *This is a metaphor because the moor is described as an ocean.*
28. **C** — *These words are common nouns because they are names for types of things.*
29. **N** — *There are no mistakes in this line.*
30. **D** — *'desants' should be 'descents' — there is a silent 'c' after the first 's'.*
31. **A** — *'plentyful' should be 'plentiful' — the 'y' changes to an 'i' when the suffix 'ful' is added to the word 'plenty'.*
32. **C** — *'begginners' should be 'beginners' — the root word is 'begin' so there is only one 'g'.*
33. **D** — *'residant' should be 'resident' — the ending should be 'ent'.*
34. **C** — *'restaraunt' should be 'restaurant' — the 'u' comes before the second 'r' and the ending is 'ant'.*
35. **C** — *'Asked' should be 'asked'. This word doesn't need a capital letter because it follows speech, even though the speech is a full sentence.*
36. **N** — *There are no mistakes in this line.*
37. **D** — *There should be a full stop after 'disease', but before the speech marks.*
38. **C** — *There should be a semicolon after 'huge' to separate two main clauses which are related.*
39. **D** — *'it's' should be 'its' — there shouldn't be an apostrophe because 'its' shows possession in this sentence.*
40. **A** — *The comma should be after 'listened', not after 'thought'.*
41. **B** — *'was' is the correct past tense form of the verb 'be'.*
42. **C** — *This is the correct tense to use to complete the clause 'it's what we were all worried we'd do'. It must be 'we'd do' to agree with 'we were all worried'.*
43. **B** — *'had' is the correct past tense form of 'have', to agree with 'Mum', so the correct option is 'had to'.*
44. **A** — *'worse' is correct — it is used to compare two bad situations.*
45. **A** — *'were' is the correct past tense form of the verb 'be' and agrees with 'Year 7s' which is plural.*
46. **D** — *'to' is correct because it completes the phrase 'in order to'.*
47. **A** — *'off' is the only preposition which makes sense here.*
48. **A** — *'By lunch' is the only option which makes sense.*
49. **B** — *'have forgotten' is the correct past tense form to use — 'have' agrees with 'everyone' and 'forgotten' is the correct spelling to use here.*
50. **D** — *This is the correct past tense form of 'write' and agrees with the singular noun, 'a word'.*

Verbal Reasoning

Paper 7 (pages 27–32)

- 1 **SEND, DENS**
- 2 **LAST, SALT**
- 3 **LAPSE, SEPAL**
- 4 **ADDER, DREAD**
- 5 **POST, STOP**
- 6 **t** rust, trend
- 7 **p** rose, place
- 8 **r** font, rice
- 9 **e** clan, plane
- 10 **b** eat, bend
- 11 **push, in** ‘Pull’ is the opposite of ‘push’ in the same way as ‘out’ is the opposite of ‘in’.
- 12 **tilt, level** ‘Lean’ and ‘tilt’ are synonyms, as are ‘flat’ and ‘level’.
- 13 **egg, seed** A ‘chicken’ comes from an ‘egg’ in the same way as ‘grass’ comes from a ‘seed’.
- 14 **cherish, question** ‘Adore’ and ‘cherish’ are synonyms, as are ‘doubt’ and ‘question’.
- 15 **destroy, discover** ‘Ruin’ and ‘destroy’ are synonyms, as are ‘find’ and ‘discover’.
- 6–20 Start with 3844, which ends with a repeated number. Two of the given words end in a repeated letter: BALL and WALL. 3844 must be the code for either BALL or WALL, so 8 = A and 4 = L. The word WAIL also ends in L, so its code must also end in 4. Only one word doesn’t end in L: BASE. Its code must be 6851. Knowing BASE = 6851 proves that B = 6, S = 5 and E = 1. The code for BALL must be 6844, so the code 3844 must be WALL, and W = 3. That leaves the code 3824, which must be for WAIL, so I = 2.

A	B	E	I	L	S	W
8	6	1	2	4	5	3

- 16 **6844**
- 17 **3824**
- 18 **6851**
- 19 **3844**
- 20 **LAWS**
- 21 **mallet** ‘Hammer’ and ‘mallet’ are both types of tools. ‘Hammer’ can also be used as a verb, meaning to hit repeatedly, but none of the options have this meaning.

- 22 **flexible** ‘Elastic’ and ‘flexible’ can both describe things that stretch and bend.
- 23 **ravenous** ‘Hungry’ and ‘ravenous’ both mean feeling the need for food.
- 24 **entire** ‘Whole’ and ‘entire’ both mean complete and undivided.
- 25 **cleanse** ‘Wash’ and ‘cleanse’ are both verbs meaning to make clean.
- 26 **holidays, birthday** ‘Happy thirteenth birthday, Warren,’ shouted his mother.
- 27 **cat, dog** The dog took her bone to her kennel and quietly ate it.
- 28 **soldier, Queen** The Queen waved at her subjects as she stood on the balcony at Buckingham Palace.
- 29 **picture, book** Jamil carefully took down a heavy reference book from the library shelf and started to read.
- 30 **newts, tadpoles** Our tadpoles grew legs and turned into frogs.
- 31 **ADD saddle**
- 32 **TAN stand**
- 33 **TAR custard**
- 34 **RAN currants**
- 35 **HER there**
- 36 **63, 42** Each number in the sequence decreases by 7.
- 37 **50, 56** The number added increases by 1 each time: +3, +4, +5, +6, +7.
- 38 **4, 32** Each number in the sequence is multiplied by 2.
- 39 **20, 10** There are two sequences which alternate. The first, third, fifth and seventh numbers follow the first sequence; the second, fourth, sixth and eighth numbers follow the second sequence. In the first sequence the number increases by 5 each time. In the second sequence the number decreases by 2 each time.
- 40 **100, 45** There are two sequences which alternate. The first, third, fifth and seventh numbers follow the first sequence; the second, fourth, sixth and eighth numbers follow the second sequence. In the first sequence the number increases by 10 each time. In the second sequence the number increases by 6 each time.
- 41 **st** almost, stance
- 42 **ch** trench, charge
- 43 **ch** broach, cheap
- 44 **ed** cried, edge
- 45 **en** ashen, enjoy
- 46 **7316** If the code is F = 1, L = 7, E = 3, T = 6, then LEFT = 7316.

- 47 **CKBMLDU** The first letter moves forward one place (P to Q) so B = C; the second letter moves back one place (I to H) so L = K; the third letter moves forward one place (L to M) so A = B; the fourth letter moves back one place (L to K) so N = M; and so on in a pattern (O to P = +1) (W to V = -1).
- 48 **UQHV** To get from the word to the code, move each letter forward two places.
- 49 **SPLASH** To get from the code to the word, move each letter forward one place. (After Z the next letter will be A as the alphabet will start again.)
- 50 **NWOR** To get from the word to the code, move each letter forward two places.
- 51 **pupil** 'Tutor' is someone who teaches so 'pupil', which means someone who learns, is the most opposite in meaning.
- 52 **commence** To 'end' something is to finish it so 'commence', which means to begin, is the most opposite in meaning.
- 53 **loosen** 'Tie' means to fix together, for instance with rope; to 'loosen' something allows it to come apart, so 'loosen' is the most opposite in meaning.
- 54 **descend** 'Climb' means to go up, so 'descend', which means to go down, is the most opposite in meaning.
- 55 **hide** 'Show' means to reveal or display, so 'hide', which means to conceal, is the most opposite in meaning.
- 56 **paper** paperweight, paperback, paperwork, paperclip
- 57 **counter** counterattack, countersign, counteract, counterpart
- 58 **under** undertake, understand, underwear, underwater
- 59 **head** headgear, headlamp, headphones, headline
- 60 **sea** seaweed, seaside, seafront, seafood

61–62

S	P	A	R	E
O		C		A
L	A	T	E	R
I		E		L
D	A	D	D	Y

63–64

S	T	A	L	E
U		W		V
P	E	A	C	E
E		I		N
R	A	T	E	S

65–66

D	I	M	L	Y
R		E		E
O	P	E	R	A
N		T		R
E	A	S	E	S

67–71 Arrange the words in a grid to make it easier to put them in the correct alphabetical order.

F	U	R	N	A	C	E		
F	U	R	N	I	T	U	R	E
F	U	R	R	O	W			
F	U	S	E					
F	U	S	S					

67 **FURNACE**

68 **FUSS**

69 **FURROW**

70 **FUSE**

71 **FURNITURE**

72–76 Beauty was in a stable next to Halo so Beauty and Halo must be in A and B, or G and H. Trigger was next to Emily so Trigger and Emily must be in A and B, or G and H. Trigger was opposite Beauty so Trigger and Beauty must be in B and G. This means that Willow must be in stable E. Halo was not on the same side as Willow. As Willow is in stable E, Halo must be in stable H. Beauty is next to Halo so Beauty must be in stable G. Trigger was opposite Beauty so Trigger must be in stable B. Trigger was next to Emily so Emily must be in stable A.

72 **Emily**

73 **Trigger**

74 **Willow**

75 **Beauty**

76 **Halo**

77 Is it Tuesday or Wednesday tomorrow?)

78 Please may I leave the room?

79 Twenty-four is six times four.

80 Silk is as soft as cat's fur.

Paper 8 (pages 32–36)

- trap, snare** Both words mean to catch or imprison.
- let, allow** Both words mean to permit.
- too, also** Both words mean 'as well as'.
- bowl, dish** Both words are containers.

5 **watch, survey** Both words mean to look at closely or observe.

6 Is **your** bath **too** hot?

7 I **think** it **may** snow today.

8 Did **you** leave it **at** the club?

9 I've **got** to meet **her** at 1 o'clock.

10 I put **the** book **on** the shelf.

11–15 Place the letters of the word below or above the coded word to make coding and decoding easier:

4	7	8	3	6	5	2
S	U	R	G	E	O	N

11 **4552**

12 **3526**

13 **8546**

14 **5784**

15 **NURSE**

16–20 Use grids as shown below to help work out the missing word.

16 **PEAK**

2	3	1			4			2	3	1				4				
D	E	A	R		A	R	I	D		H	E	A	P		D	I	S	K

17 **MOAN**

3	1	4			2				3	1	4			2				
H	A	V	E		I	C	O	N		A	M	E	N		S	O	U	R

18 **SEAL**

3	4		1			2			3	4		1				2		
S	T	U	B		D	A	Z	E		A	L	E	S		T	I	M	E

19 **PORT**

	2		1			3	4			2		1				3	4	
P	A	N	T		B	I	K	E		L	O	O	P		C	A	R	T

20 **TURN**

3	2				1			4		3	2				1			4
L	U	C	K		C	O	L	T		R	U	S	K		T	E	E	N

21–22

	F			I			P
T	U	N	N	E	L		
	T			S			A
T	I	D	I	L	Y		
	L			S			E
L	E	T	T	E	R		

23–24

	D			D		S
B	A	N	I	S	H	
	N			R		A
S	C	R	E	A	M	
	E			C		E
G	R	A	T	E	D	

25–26

	S			P		A
S	P	R	A	Y	S	
	R			R		T
R	E	M	O	T	E	
	A			L		R
A	D	D	E	R	S	

27 **te** crate, tenth

28 **el** towel, elbow

29 **in** grain, insect

30 **le** table, leaves

31 **or** motor, organ

32 **hero** He baited the hook and tested **the rod**.

33 **rent** It never **entered** my head.

34 **wash** I remember when he **was** head teacher.

35 **show** Few things, **however**, have shaken him.

36 **fort** He broke the school record **for** **the** long jump.

37–40 Category A contains words to do with travel documents (**passport, tickets, visa**)

Category B contains words to do with land types (**rainforest, grassland, mountains**)

Category C contains words to do with weather (**tempest, gale, tornado**)

Category D contains words to do with materials (**cotton, silk, wool**)

41 **THICKEN**

42 **STABLE**

43 **REWARD**

44 **STRUNG**

45 **SOLVE**

46 **thunder** thunderstorm, thunderbolt, thundercloud, thunderclap

47 **head** headmaster, headlight, headdress, headquarters

48 **tooth** toothpaste, toothache, toothbrush, toothpick

49 **hand** handwriting, handkerchief, handshake, handcuff

50 **finger** fingernail, fingertip, fingerprint, fingermark

51 **25, 33** Each number in the sequence increases by 8.

- 52 **59, 51** Each number in the sequence decreases by 4.
- 53 **40, 160** Each number in the sequence is multiplied by 2.
- 54 **11, 9** There are two sequences which alternate. The first, third, fifth and seventh numbers follow the first sequence; the second, fourth, sixth and eighth numbers follow the second sequence. In the first sequence the number increases by 3 each time. In the second sequence the number increases by 10 each time.
- 55 **42, 9** There are two sequences which alternate. The first, third, fifth and seventh numbers follow the first sequence; the second, fourth, sixth and eighth numbers follow the second sequence. In the first sequence the number increases by 6 each time. In the second sequence the number decreases by 9 each time.
- 56 **RAT** grated
- 57 **OUR** course
- 58 **ATE** water
- 59 **MAT** match
- 60 **OLD** golden

61–65 A table is the easiest way to sort the information, like this:

	Sausages	Fish	Chips	Mashed Potatoes	Ice cream	Trifle	Coffee
A	✓		✓		✓		
B	✓			✓		✓	✓
C		✓	✓			✓	✓

- 61 **C**
- 62 **A**
- 63 **B**
- 64 **B and C**
- 65 **B**
- 66–69 Try each of the words in the first set of brackets. Do they make sense with any words in the second and third set of brackets? Only one combination of three words makes sense.
- 66 **built, bank, river**
- 67 **constructed, wall, markets**
- 68 **film, story, sad**
- 69 **fall, lengthened, set**
- 70 **hand, finger** A 'foot' has a 'toe' on it in the same way as a 'hand' has a 'finger' on it.
- 71 **two, double** 'One' is a synonym for 'single' as 'two' is for 'double'.
- 72 **hide, animal** 'Skin' covers the body of a 'man' in the same way as 'hide' covers the body of an 'animal'.
- 73 **happy, joy** 'Sad' is the adjective associated with 'sorrow' in the same way as 'happy' is the adjective associated with 'joy'.

- 74 **pledge, promise** 'Oath' is a synonym for 'vow' as 'pledge' is for 'promise'.
- 75 **22** $6 + 7 + 3 + 1 + 5$
- 76 **21** $8 + 3 + 3 + 7$
- 77 **23** $6 + 7 + 3 + 1 + 6$
- 78 **19** $7 + 3 + 1 + 8$
- 79 **15** $4 + 1 + 2 + 3 + 5$
- 80 **24** $6 + 7 + 1 + 2 + 3 + 5$

Non-Verbal Reasoning

Test 4 Answers

Section 1 : Matrix

Q1 (d) : rotate 90° clockwise and add circle next to point

- horizontally we have a 90° clockwise rotation – should point down – rule out (c)
- should have white circle either at the right or at the point – rule out (a)
- shading rotates 90° – should now be horizontal – rule out (b)
- compare (d) & (e) – shape's wrong in (e) so answer = (d)

Q2 (e) : shape on horizontals; black moves outwards on horizontals

- shape comes from row – all OK but (b)'s too small
- black section the same on right diagonals – should be outer – rule out (c)
- that's all so compare (a) (d) & (e) – 2 blacks in (a), rotated in (d) so answer = (e)

Q3 (b) : 1 becomes 4 (1 on each corner) with shading increased and rotated 90° for top right & bottom left

- 1 shape becomes 4, one on each corner – rule out (c)
- shading unchanged for top left & bottom right – rule out (d)
- shading rotated 90° for top right & bottom left – rule out (e)
- compare (a) & (b) – shading should get smaller – rule out (a) leaving answer = (b)

Q4 (c) : bottom row is middle row + vertical flip of top

- where does the bottom row come from – has same inner as mid – rule out (a) (b) & (d)
- compare (c) & (e) – which way up is the heart? – flip from top row so answer = (c)

Q5 (d) : left to right horizontal flip

- can see immediately that right is an H-flip of the left & nothing else
- need white rectangle at left hand side – rule out (a)
- need black right pointing arrow at mid bottom – rule out (c) & (e)
- compare (b) & (d) – arrow style is wrong in (b) so answer = (d)

{Was leaving line figure till last as it's hardest – luckily it wasn't needed}

Q6 (c) : downwards, shapes lose a sector & go grey then black

- relationship is in columns – a bit gets lost as you go down – rule out (b) as it's not a star
- bottom left should be lost so rule out (d) & (e)
- compare (a) & (c) - middle row should be grey so answer = (c)

Q7 (a) : shapes H-flip and colour reverse; V- flip line figures

- tricky – solid figures have H-flipped & gone black
- look for black pentagon pointing up in top right – rule out (d) & (e)
- look for parallelogram skewed left at bottom left – rule out (b)
- compare (a) & (c) – line figure is a V-flip – (c) is rotated so answer = (a)

Q8 (e) : shape from verticals; size from left diagonals; arrow direction from right diagonals

- size comes from left diagonals – need medium but they all are
- shape comes from columns – heptagon with flat bit at bottom – rule out (b) & (c)

- centre shape comes from right diagonal – down arrow so answer = (e)

Q9 (e) : left element enlarges; right element goes half black

- downwards, left element gets bigger – rule out (a) & (c) (H-flipped)
- right element gets black on the right – rule out (b)
- compare (d) & (e) – left element has changed shape in (d) so answer = (e)

Q10 (b) : centre shape & pentagon from columns; line figures from rows

- what a mess! - centre shape same in columns – need up triangle – rule out (d)
- pentagon also the same in columns - need grey pentagon – rule out (a)
- line figure seems to be the same across rows – starts with black square bottom left
- rule out (c) & (e) leaving answer = (b)

Q11 (a) : line figure unchanged; top symbol has black duplicate beneath; bottom symbols swap colours & sides & moves

- line figure seems to stay the same – (c) is wrong
- top line ending stays but a black copy appears underneath – rule out (d)
- bottom line ending changes colour & goes right – need white hexagon – not (b) & (e)
- leaves (a) – black arrow at bottom left seem right so answer = (a)

Q12 (e) : line figures show symmetry around centre; shapes are repeated across rows

- looks like symmetry across the centre but it isn't – the little symbols don't fit
- lines are symmetrical, solid figures repeat across rows – not (d) – asymmetric line figure
- need white square at top right – rule out (a) & (b)
- compare (c) & (e) – black dot should be lower left so answer = (e)

Q13 (a) : vertical flip & colour swap

- obviously a V-flip here so rule out (b) & (c)
- colours swap so vertical will be black, horizontal white – rule out (e)
- compare (a) & (d) – layers don't change so vertical on top, answer = (a)

{Should the ¼ circle have gone white? – maybe but the answers said not so don't worry}

Q14 (d) : left to right, 45° anti-clockwise rotation

- columns give the orientation so rule out (b) – also (a) only has 3 so get rid of that
- line endings same across rows – white dots at bottom – rule out (c)
- leaves (d) & (e) – need black ovals at both ends so answer = (d)

Q15 (d) : figures swap sizes but retain shading

- across – inner becomes outer and vice versa – oval outer flower pot inside – not (c)
- shading is retained – oval should be V-shaded – rule out (b) & (e)
- compare (a) & (d) – which way up is the flower pot? - unchanged so answer = (d)



Q16 (b) : 3 of each colour combination; 3 of each bar number - need black + white with 2 bars

- orientation from rows – not very helpful, they're all horizontal
- look at the bars – 3 3's; 3 1's but only 2 2's – need a 2 bar so rule out (c) & (e)
- what about end colours? – 3 2-blacks; 3 2-whites – need black/white so answer = (b)

{quite a common type – location doesn't matter just three of each type}

Section 2 : Codes

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

- 2 Y's as 1st letter – goes with shape – unknown is arrow so 1st letter is P
- 2 G's as 2nd letter – goes with shading – unknown is white so 2nd letter is A
- answer = PA = (e)

Q2 (a) : RK - 1st is shape; 2nd is number of segments

- 2 N's as 1st letter – goes with shape – unknown is arrow so 1st letter is R
- 2 F's as 2nd letter – goes with divisions – unknown is undivided so 2nd letter is K
- answer = RK = (a)

Q3 (b) : FK - 1st is shape; 2nd is shading (ignore orientation)

- 2 B's as 1st letter – could be shape or shading – unknown is white chevron – F or B as 1st
- same with 2nd letters – 2 K's could be shape or shading so unknown is C or K as 2nd letter
- 2 possible answers – if 1st is shape we have FK – if 1st is shading we have BC
- since BC isn't a possibility, answer = FK = (b) (orientation wasn't coded at all)

{If you find that the answer you want isn't available then look out for this sort of problem}

Q4 (d) : BY - 1st is orientation; 2nd is shape/style

- 2 J's as 1st letter – goes with orientation – unknown is left so 1st is new letter
- 2 O's as 2nd letter – goes with arrow style – unknown is like 1st so 2nd letter is Y
- answer = (new)+Y = BY = (d)

Q5 (c) : KL - 1st is end colours; 2nd is number of loops

- 3 F's as 1st letter – goes with black & white at ends – unknown is black only so 1st letter is K
- 2 D's as 2nd letter goes with 1 loop – unknown has 2 loops so 2nd letter is L
- answer = KL = (c)

Q6 (b) : GJ - 1st is height; 2nd is shading

- 2 G's as 1st letter goes with height of bar – unknown is lower middle so 1st letter is G
- 2 Y's as 2nd letter goes with shading – unknown is right diagonal so 2nd letter is J
- answer = GJ = (b)

Q7 (d) : CV - 1st is position; 2nd is number

- 2 B's as 1st letter goes with dot position – unknown at bottom so 1st letter is C

- 2 H's as 2nd letter goes with dot number – unknown has 2 so 2nd letter is V
- answer = CV = (d)

Q8 (a) : NA - 1st is rotation; 2nd is centre shading

- 2 O's as 1st letter goes with rotation = unknown has non-diagonal at right so 1st letter is N
- 2 Q's as 2nd letter goes with centre shading – unknown is grey so 2nd letter is A
- answer = NA = (a)

Q9 (c) : UI - 1st is direction of shading (ignore spacing); 2nd is shape

- 2 C's as 1st letter – both have right diagonal shading but the spacing is different
- if that's alright then unknown has horizontal so 1st letter will be U
- 2 M's as 2nd letter goes with shape – unknown is up arrow so 2nd letter is I
- UI is an option so answer = UI = (c)

{Always double check if something doesn't seem quite right – in this case it was OK}

Q10 (e) : TJ - 1st is number of raindrops; 2nd is shading of centre spot (ignore polygon)

- 2 T's as 1st letter goes with number of raindrops – unknown has 1 so 1st letter is T
- 2 U's as 2nd letter goes with spot colour – unknown is white so 2nd letter is J
- answer = TJ = (e)

{You know the polygon is irrelevant as the 2 diamond shapes have different codes}

Q11 (e) : SHA - 1st is orientation of shape; 2nd is shape; 3rd is the number of dots

- 2 T's as 1st letter goes with orientation – unknown is left diagonal so 1st letter is S
- 2 Z's as 2nd letter goes with shape – unknown is rectangle so 2nd letter is H
- 2 C's as the 3rd letter goes with number of dots – unknown has 3 so 3rd letter is A
- answer = SHA = (e)

Q12 (c) : OB - 1st is right letter; 2nd is left letter







- 2 D's as 1st code letter goes with 'T' as right 'shape' – unknown has 'J' so 1st letter is O
- 2 P's as 2nd code letter goes with 'H' as left 'shape' – unknown is 'D' so 2nd letter is B
- answer = OB = (c)

{Very difficult one – easy to make mistakes if you don't keep telling yourself the big 'letters' are just pictures not letters and they are not codes themselves; P doesn't code for 'P'}

Q13 (b) : YD - 1st is oval shading; 2nd is number of circles (ignore everything else)

- 2 J's as 1st letter goes with oval shading – unknown is white so 1st letter is Y
- 2 U's as 2nd letter goes with number of circles – unknown has 1 so 2nd letter is D
- oval orientation and circle shading not coded so answer = YD = (b)

Q14 (e) : DV - 1st is orientation of curve; 2nd is type of triangle (not shading)

Examberry  Examberry  Examberry  Examberry  Examberry  Examberry  Examberry

Q15 (c) : CS - 1st is below line (all elements); 2nd is shape above line

- 2 N's as 1st letter goes with curve orientation – unknown points down so 1st letter is D
- 2 T's as 2nd letter goes with type of triangle – unknown is like 3rd so 2nd letter is V
- answer = DV = (e)

Q16 (a) : OF - 1st is number of sides; 2nd is shading

- 2 T's as 1st letter goes with nothing very much – they're all polygons so count the sides
- 2 T's goes with 5 sides – unknown has 6 sides so 1st letter is O
- all different 2nd letters – could be shape or shading
- unknown is chevron with horizontal shading – shape gives new letter; shading gives F
- answer = O+(new) or OF – only OF is an option so answer = OF = (a)

{tricky question – think carefully and explore all the options}

Section 3 : Belongs With

Q1 (b) : 2 quadrilaterals touching at one corner which lies within an oval

- common feature is an oval – they all have that so nothing ruled out
- 2 polygons touch within the oval – rule out (a) & (d)
- the polygons are both quadrilaterals – rule out (c) & (e) leaving answer = (b)

Q2 (e) : large figure with small copy inverted at right, circle to left and cross in centre

- 3 shapes within a shape – one of them is an inverted copy of the outer – rule out (b)
- inverted shape is on right – rule out (c)
- left shape is a circle – rule out (a)
- compare (d) & (e) – 3rd shape should be some sort of cross so answer = (e)

Q3 (c) : 3 symbols on a hexagon; clockwise oval triangle rectangle; oval is underneath

- large shape is a hexagon – rule out (d)
- shapes on the hexagon are a rectangle, right angle triangle and oval – the oval is underneath
- rule out (a) (oval within the hexagon); rule out (b) (oval on top)
- compare (c) & (e) – order should be clockwise oval, triangle rectangle so answer = (c)

Q4 (d) : rectangle with oval inside and third unshaded symbol within the oval

- outer rectangle, any orientation – rule out (a) (bold) & (e) (too short)
- middle oval – think (b) is too long – check carefully – yes so rule out (b)
- compare (c) & (d) – don't want a black inner so answer = (d)

{Sometimes the eye is deceived by optical illusions but the oval in (b) is definitely closer to the ends of the rectangle so either the rectangle is shorter or the oval longer}

Q5 (a) : 2 triangles overlapping at one corner making a quadrilateral

- 2 triangles overlapping so both are visible – rule out (d) & (e)
- overlaps are corner to corner – rule out (b) & (c) leaving answer = (a)

Q6 (c) : different rotations of same figure

- look a bit like a chair - they're either the same or mirror images of each other
- base makes an acute angle with upright on left hand side – they're the same
- try to imagine the others with the 'base' at the bottom
- (e) is too small; (b) is too wide; (d) has base at wrong angle
- compare (a) & (c); (a) is the wrong way round so answer = (c)

{If you find this difficult try to view each part of the picture separately and eliminate what is wrong}

Q7 (d) : have same overlapping oval and diamond with black tip

- common feature is diamond poking out of oval – rule out (a) (b) & (e)
- compare (c) & (d) – tip of oval which projects should be black so answer = (d)

Q8 (d) : 2 identical line figures cross each other once at right angles

- each consists of a pair of line figures which cross once – rule out (b)
- the line figures make an identical pair – rule out (a) (c) & (e) leaving answer = (d)

Q9 (b) : regular hexagon; outward pointing black arrows separated by 1 corner, white circle at next corner clockwise

- outers - regular hexagons in same orientation – rule out (c)
- within, 2 black arrows pointing out & white circle – rule out (e)
- 1 point between arrows – rule out (a)
- compare (b) & (d) – order should be arrow - space - arrow – circle, clockwise so answer = (b)

Q10 (e) : figures share horizontal line, positions of 3 squares & 2 shapes over the line

- 2 shapes on top of a horizontal line – nothing ruled out
- single white square in left shape at level of line – rule out (a) (b) (c) & (d)
- only leaves (e) – check, 2 squares on right, any shading so answer = (e)

Q11 (b) : 2 concentric squares, 1 solid 1 dashed with diamonds at 3 corners - opposite corners have same shading

- 2 concentric squares, 1 dashed & 1 solid – rule out (c) & (e)
- 3 diamonds inside, at corners – rule out (d) (1 square)
- compare (a) & (b) – odd shade should be opposite empty corner so answer = (b)

{If you said black & white diamonds you would end up eliminating everything – when that happens you have to say which feature is most important & start again}

Q12 (a) : triangle points anti-clockwise; figures alternate black and white

- circle with black oval top left, white at top right – this rules out everything!



- try black & white alternating round circle – rule out (b) & (d)
- triangle points anti-clockwise – only (a) is clockwise so answer = (a)

{It can take a while before you hit on the right feature to see what belongs}

Q13 (d) : oval on curve, square on short side, curve with arrow cuts off quadrant at end of longer lines with arrow head next to oval

- sector of oval, with curly arrow, white oval & black square – rule out (a) (oval not on top)
- sector of oval could be mirrored – yes, (b) is a flip so rule that out
- arrow should go through narrow end of oval – rule out (c)
- compare (d) & (e) – arrow head should be next to curve of oval sector so answer = (d)

Q14 (c) : shapes are the same, black is underneath & 90° clockwise from white

- white over black – rule out (b)
- same shapes (flipped J) – rule out (a)(d) & (e) (have J's) so answer = (c)
- check (c) – looks good – rotate black 90° anti-clockwise to get to white

{If it seems too easy – look at the answer in case there is something horrible about it}

Q15 (e) : dotted line defines line of symmetry

- line of symmetry about line – rule out (a), (c) (d) leaving only (b) & (e)
- compare (b) & (e) – line should be dotted so answer = (e)

Q16 (c) : half the figure has one shading, half another

- not much in common – 3 grey & 3 white or 2 black & 2 white
- half the figure is shaded – rule out (a) & (b)
- (e) is 4 unconnected figures so rule that out
- compare ((c) & (d) – better all the shading is the same so answer = (c)

{use your judgement – half with same shading beats half having solid shading}

Section 4 : Analogies

Q1 (c) : figure goes bold, stretches vertically & skews right

- figure goes bold – rule out (a), (b) & (e) (too bold)
- compare (c) & (d) – should be skewed to the right so answer = (c)

Q2 (e) : figure & its shading rotate 90° inside large white duplicate of original

- figure & its shading rotate 90° (could be either way) – rule out (a) & (c)
- copy of original figure loses shading and enlarges – rule out (b) & (d) leaving answer = (e)

Q3 (b) : 2 superimposed polygons break apart vertically

- tricky but looks like 2 figures superimposed break apart & become separated
- look for a diamond at the top or bottom – rule out (c) & (d) (bold)
- look for a split hexagon opposite the diamond – rule out (a)
- compare (b) & (e) – shapes shouldn't flip so answer = (b)

Q4 (c) : inverts; balls and curve added top and bottom

- original shape V-flips or rotates 180° – rule out (a) & (d)
- ball & arc figures added top & bottom – rule out (b) & (e) (shading wrong)
- leaves only (c) – looks good so answer = (c)

Q5 (d) : 2 overlapping polygons - black dots appear at centre of both and non-overlap half of each disappears

- 2nd figure is taken from centre of 1st – (c) is wrong shape, (e) is squashed
- black dots added either side – rule out (a) & (b) leaving (d) so answer = (d)

{Hard to see but figures are just 2 hexagons – flat sides top & bottom}

Q6 (c) : small black copy in centre; small copies facing different ways at bottom

- figure stays, small black copy at centre – rule out (d) (flipped)
- small white copies at bottom face different ways – rule out (a) (b) (e) leaving answer = (c)

Q7 (d) : diagonal figures become superimposed

- its messy – bottom figure is bottom left & top right superimposed – not (a) or (e)
- top figure likewise – need diamond + hexagon – rule out (b)
- compare (c) & (d) – triangle is rotated in (c) – can't tell when a circle rotates
- rule out (c) as it involves an extra step – simplest is best so answer = (d)

{The rule is always the simplest solution is the best}

Q8 (b) : small shape inside large becomes large only with outline of small

- 2 concentric diamonds become the larger with the outline of the smaller
- need large dotted tear drop – rule out (a), (d) & (e)
- compare (b) & (c) – no need for figure to flip so answer = (b)

Q9 (e) : colour of 1st goes to ring of 12 triangles with normal outline inside

- grey heptagon gives heptagon with normal outline – rule out (d)
- 12 grey triangles outside – we will need black ones as square is black – rule out (c)
- start counting – not (a) but (b) & (e) have 12
- compare (b) & (e) – need triangles top & bottom so answer = (e)

Q10 (a) : make smaller, flip horizontal then rotate 90° clockwise

- flips and rotates - black sector will be at right – rule out (b) & (c)
- noticed (e) was hopeless – oval on mid line and vertical black sector at right
- compare (a) & (d) – we need to flip as well as rotate so answer = (a)

Q11 (c) : rotates 90° clockwise (shading rotates with figure)

- can see that the black, white, grey & dotted have rotated 90° clockwise
- follow the white first – should be on the left – rule out (a) (b) & (e)
- compare (c) & (d) – what should happen to the line shading?



- line shading rotates with the figure; 90° clockwise gives us answer = (c)
- Q12** (e) : squash vertically then duplicate
- one becomes identical pair of squashed figures – (a) (b) & (c) are not identical so not them
 - compare (d) & (e) – (d) has H-flipped so answer = (e)
- Q13** (a) : 180° rotation; vertical element with small figure becomes dashed
- 180° rotation of everything – rule out (b) (c) & (d)
 - compare (a) & (e) – which way round should the whistle be – answer = (a)
- Q14** (d) : (not left is to right) flip horizontal; small element changes black / white
- can see an H-flip here – rule out (c)
 - black dot becomes white but 3rd figure is already white – must go from 2nd to 1st
 - need black rectangle bottom right – rule out (b) & (e)
 - compare (a) & (d) main shape is wrong in (a) so answer = (d)
- Q15** (b) : rotate 90° anti-clockwise while retaining copy of major element - overlap area goes black
- shape with its dots has rotated 90° anti-clockwise – only (a) & (b) have rotated the blacks
 - compare (a) & (b) – only black orientation differs – no reason to change so answer = (b)
- Q16** (d) : 120° anti-clockwise; black white swap; outline thinner
- 3rd figure is bold like 1st so this is left to right
 - ball colours have swapped – rule out (b) & (e)
 - rotates a bit more than 90° anti-clockwise – white ball should be lower right – answer = (d)
- {Hard to be precise about rotations when they're not in 45° intervals – this is actually 120°}

Section 5 : Series

- Q1** (b) : arrow head rotates 45° clockwise; alternate black white
- alternating black & white – need white so rule out (c) & (d)
 - arrow head is rotating – should point up & right – rule out (a)
 - compare (b) & (e) – arrow shaft has rotated in (e) so answer = (b)
- Q2** (e) : 1 line flips; white ball moves 90° clockwise round oval; black ball remains at top - balls superimposed in 1 & 5
- 1 diagonal line flips over each time – need 1 left, 4 right – rule out (c) & (d)
 - lines were upside down in (a)
 - compare (b) & (e) – black ball always at top so answer = (e)
- {White ball is moving clockwise so both will be at the top but black over white always shows as black (as in 1st frame)}
- Q3** (a) : alternating pattern; rotates 90° anti-clockwise
- big & little alternate – need bit – not fat though so rule out (c)
 - figure rotates 90° anti-clockwise – need small black sector at bottom – rule out (b) & (e)
 - compare (a) & (d) – (d) is flipped so answer = (a)
- Q4** (c) : snake loses a curve every other step and flips vertically each time; square added alternating top and bottom

- squares increase and alternate top & bottom – need 2 at bottom – rule out (d)
 - snake alternates head up & down – need down so rule out (a) – also (b) facing left
 - compare (c) & (e) – have to count the curves
 - from the right it goes 4-5-5-?-6 – changes every other step – need 6 so answer = (c)
- Q5** (b) : sun doesn't change; stars alternate 2 or 3; number of points increases by 1
- sun is constant – rule out (d)
 - stars increase then decrease 2-3-?-3-2 : could be 2 or 4 – rule out (e)
 - points on stars increase by 1 – need 5 – rule out (c)
 - compare (a) & (b) – didn't notice the sun changed in (a) so answer = (b)
- Q6** (e) : frames 1 3 5 anti-clockwise by 70°
- alternating main figure will be circle but they all are
 - outer ball alternates – need white so rule out (c) – also (a) is squashed
 - from 1st to 3rd rotation is a bit less than 90° – should go to top left
 - rule out (b) & (d) leaving answer = (e)
- Q7** (b) : triangle moves clockwise round corners; cross rotates 45° anti-clockwise; centre alternates colour, small rectangle moves 45° clockwise
- triangle moves round the corners – should be bottom left – rule out (a) & (e) (points in)
 - main figure – need black square – they all are
 - small rectangle moves 45° clockwise – should be at top left – rule out (c)
 - compare (b) & (d) – cross rotates 45° anti-clockwise so answer = (b)
- Q8** (e) : inner & outer alternate outline; outer becomes next inner
- outlines seem to alternate – need dotted outer, bold inner – rule out (a) (c) & (d)
 - compare (b) & (e) – what should the outer be? – outer becomes the inner of the next
 - 4th has diamond inside so 3rd will be diamond outside – answer = (e)
- {Common pattern inner becomes outer or vice versa. Don't be fooled by 1st & 2nd – looks like inner of 1st becomes outer of 2nd but that doesn't work from 4th to 5th}
- Q9** (b) : outer ball moves clockwise; inner moves anti-clockwise
- let's work from right to left – outer ball 1 side anti-clockwise – should be top left, not (a) & (e)
 - inner ball 1 side clockwise – should be right side – answer = (b)
- {When the missing frame is on the left, it makes sense to view the series right to left}
- Q10** (a) : centre cross alternates black / white; 1 shape appears in top left with horizontal stripes then moves anti-clockwise with different shading at each corner
- centre cross alternates colour – should be white – they all are but (d) is rotated
 - get a new symbol each time – appears top left then moves anti-clockwise round the corners
 - need triangle top left (not (e)); flower pot bottom left (not (b)); square bottom right (OK)
 - compare (a) & (c) – top left should be H-shade so answer = (a)

Examberry  Examberry  Examberry  Examberry  Examberry  Examberry  Examberry

- Q11 (a)** : alternate figures are 90° clockwise on previous and swap shading between inner and outer
- looks like figures change every other frame – expect pentagon in frame 3 – rule out (b)
 - from 1st to 2nd we have 90° clockwise rotation – need pentagon pointing right – not (c) & (e)
 - compare (a) & (d) – inner shading – shading same from 1st to 2nd so we need left shading
 - (d) is right shaded so answer = (a)

- Q12 (d)** : 45° anti-clockwise rotation; head alternates black & white
- butterfly rotates 45° anti-clockwise – will be 180° from 1st – rule out (c)
 - head alternates colour – need black so rule out (a)
 - that seems to be all so look carefully at what’s left – (e) is symmetrical so rule that out
 - should be a black sector to right of head – (d) looks good so answer = (d)

- Q13 (c)** : figure alternates rotating 90° anti-clockwise and colour swapping
- rotation of 90° anti-clockwise every other frame – should point left so rule out (b) & (e)
 - colours swap between pair that face the same way – need black on top – rule out (a)
 - compare (c) & (d) – arrow wrong in (d) so answer= (c)

- Q14 (e)** : figure rotates 60° anti-clockwise; centre shade rotates with figure; outer shading swaps
- figure rotates anti-clockwise – 60° so (d) is wrong and (b) is hopeless
 - base alternates- should be black so rule out (a)
 - compare (c) & (e) – shading rotates with figure so (e) is right; answer = (e)

- Q15 (c)** : balls alternate colour; new one appears in anti-clockwise sequence
- confusing - extra ball each time appearing in anti-clockwise sequence
 - new one will be at top so rule out (a) (b) & (e)
 - compare (c) & (d) – shading – original 5 alternate & will be black so answer = (c)

- Q16 (e)** : centre shading alternates; outer shading rotates 45° clockwise
- white oval & its squares stay the same – rule out (a) & (d)
 - outer shading rotates 45° clockwise so will be horizontal – rule out (b)
 - compare (c) & (e) – centre shading alternates – should be vertical so answer = (e)

END

Quick Lesson Recap

1) Find 65% of 120 = **78**

2) Workout the mean of 7, 25 and 13 = **15**

3) What is $\frac{5}{6}$ of 660 ? **550**

4) $\frac{2}{5} + \frac{5}{15} = \frac{11}{15}$

5) Convert 550ml to litres = **0.55L**

6) Convert 4.57L to ml = **4570ml**

7) Convert 13.5kg to grams = **13,500g**

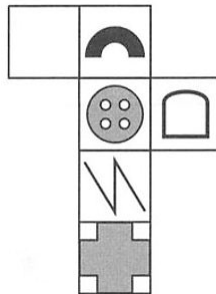
8) Convert 298g to Kg= **0.298kg**

9) What are the three things to look out for in Non-verbal reasoning, when solving the cube net type questions?

a.

b.

c.



Homework – Vocabulary to memorise

Vocabulary 4

Exercise A

1. Administrator
2. Hysterical
3. Delude
4. Imminent
5. Wince
6. Primitive
7. Eccentric
8. Persuasive
9. Excursion
10. Facility

Exercise B

1. Wince
2. Persuasive
3. Primitive
4. Delude
5. Excursion
6. Eccentric
7. Imminent
8. Hysterical
9. Administrator
10. Facility

Anagrams**Test 4**

1. t Leaves fall off the trees in autumn.
2. a The aroma of the baking cake made me hungry.
3. c It's hard to focus with that music on.
4. n The nurse said the injection would not hurt.
5. x Nobody expected the exam to be easy.
6. e I read at least one book a month.
7. j There were jars of jam lining the shelves.
8. r I prefer roast potatoes to mashed ones.
9. s I only listen to people I respect.
10. q I felt queasy for quite a long time today.

Related Words

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Test 4

1 ecstatic

Solution: The words in the grid are all synonyms of 'happy'. The words on the left side of the grid are a more extreme version of happiness than the ones on the right. Each words in the bottom is a precise synonyms of the word directly above it (e.g. 'elated' is a precise synonym of 'ecstatic').

2 blood

Solution: The only vowel in all the words in the grid is 'o'. In each row, the first word contains one, the second word contains two and the third word contains three.

3 some

Solution: The words in the top row of the grid are all parts of the body. Each of these can be joined to the word directly below to make one completely new word (e.g. 'hand' and 'some' = 'handsome').

4 able

Solution: All of the words in the top row of the grid can be joined to each of the suffixes – 'able', 's' and 'er' - in the bottom row to form new words (e.g. 'portable', 'ports' and 'porter', 'wearable', 'wears', 'wearer', 'payable', 'pays', 'payer').

5 cede

Solution: The words in the top row each rhyme with the word directly below (e.g. 'seed' rhymes with 'cede').

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6 chimpanzee

Solution: The words in the grid are all animals. The words in the top row all have four syllables, whereas the words in the bottom row all have three syllables.

7 black

Solution: Each word in the top row of the grid is a shade / version of the colour directly below (e.g. 'jet black').

8 whale

Solution: The top row words are all colours. Each one can be joined to the word directly below to form the name of an animal (e.g. 'blue whale').

9 two

Solution: The words in the top row of the grid are all quadrilaterals. The number directly below each shape indicates the number of lines of reflective symmetry that it has (e.g. a 'rectangle' has 'two' lines of symmetry).

10 rule

Solution: The words in the top row are all homophones. Each one is a synonym of the word directly below (e.g. 'reign' is a synonym of 'rule').

Rhyming Synonyms

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Test 4

1. **E redirected**
converted → diverted → redirected
2. **A courage**
pallor → valour → courage
3. **A receptacle**
trestle → vessel → receptacle
4. **E flag**
tyre → tire → flag
5. **A pretentious**
defected → affected → pretentious
6. **A noble**
signified → dignified → noble
7. **D suitable**
lenient → convenient → suitable
8. **E vivid**
sleight → bright → vivid
9. **C particles**
creases → pieces → particles
10. **E trough**
retainer → container → trough