BROAD HORIZON
TUITION CENTRE

11+ Tuition – Year 5

Week 3

ANSWERS

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Core Maths – Perimeter and area

Question	Answer
1.	Calculate the perimeter of these shapes. Which is the odd one out, and why?
	Odd shape out: ***Shape C***
	Reason: ***a sentence to show that Shape C has a perimeter of 12cm and all the other shapes have a perimeter of 14cm.***

★

1. 30
2. 26
3. 38
4. 40
5. 56
6. 34
7. 52
8. 52
9. 60

★★

1. 30
2. 50
3. 54
4. 40
5. 56
6. 62
7. 58
8. 94
9. 210

Practice – Area

1. $4 \times 2 = 8cm^2$
2. $3 \times 3 = 9cm^2$
3. $2 \times 5 = 10cm^2$
4. $6 \times 1 = 6cm^2$
5. $3 \times 2 = 6cm^2$
6. $2 \times 4 = 8cm^2$
7. $4 \times 4 = 16cm^2$
8. $1 \times 7 = 7cm^2$
9. $2 \times 2 = 4cm^2$
10. $4 \times 1 = 4cm^2$
11. $5 \times 3 = 15cm^2$
12. $6 \times 2 = 12cm^2$

Name : _____

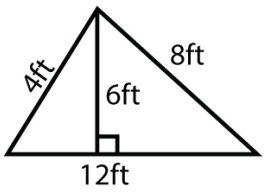
Score : _____ Date : _____

MATH MONKS

Area and Perimeter of Triangles Worksheet

Answers

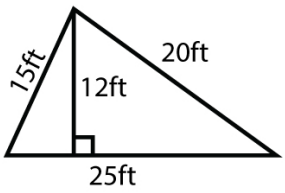
1



Area = 36ft²

Perimeter = 24ft

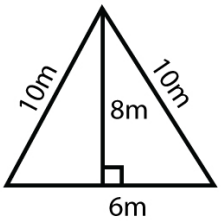
2



Area = 150ft²

Perimeter = 60ft

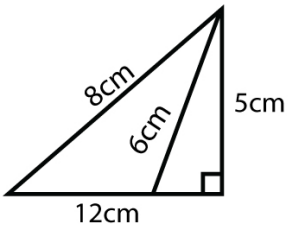
3



Area = 24m²

Perimeter = 26m

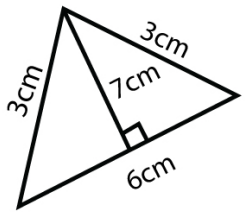
4



Area = 30cm²

Perimeter = 25cm

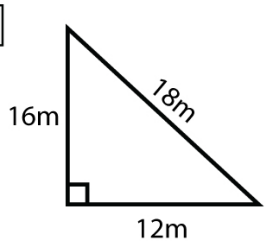
5



Area = 21cm²

Perimeter = 12cm

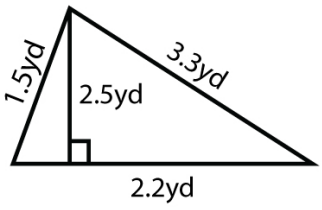
6



Area = 96m²

Perimeter = 46m

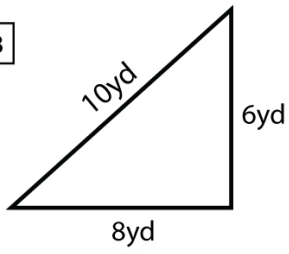
7



Area = 2.75yd²

Perimeter = 7yd

8



Area = 24yd²

Perimeter = 24yd

Name : _____

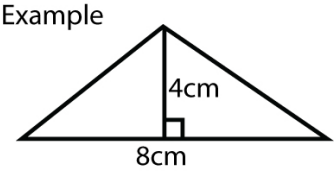
Score : _____ Date : _____

MATH MONKS

Area of a Triangle Worksheet

Use formula, area = $\frac{1}{2}$ x base x height

Solved Example

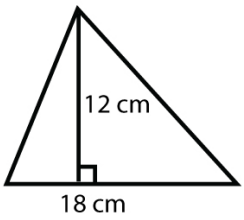


Area = $\frac{1}{2}$ x b x h

= $\frac{1}{2}$ x 8cm x 4cm = 16 cm^2

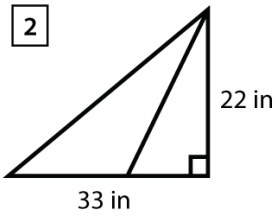
Answers

1



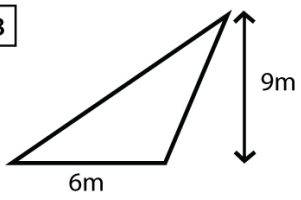
Area = 108cm^2

2



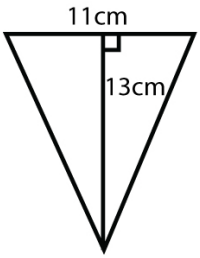
Area = 363in^2

3



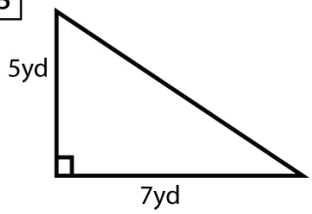
Area = 27m^2

4



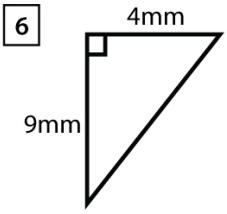
Area = 71.5cm^2

5



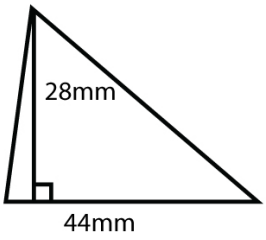
Area = 17.5yd^2

6



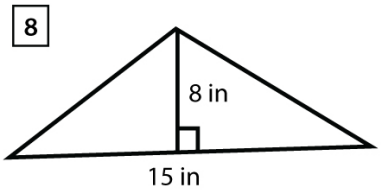
Area = 18mm^2

7



Area = 616mm^2

8



Area = 60in^2

Starter Task – Quick Revision

Starter Task – Quick Revision

1) What do the angles in a four-sided shape add up to?

360

2) What is the 5th triangle number?

15

3) What is the 7th triangle number?

28

4) If C = 8 then what is f in 2C + (10 – C) =

18

5) Convert the following into percentages:

a. $\frac{2}{5}$ =

40%

b. $\frac{1}{8}$ – =

12.5%

6) Find 10% of 250

25

7) Find 5% of 250

12.5

8) Now find 45% of 250

112.5

Starter task – Vocabulary

Exercise C

1. Enormity
2. Caption
3. Contemplate
4. Assertive
5. Reciprocate
6. Refute
7. Outstanding
8. Colleague
9. Preoccupy
10. Apprehend

Math

Test 5 — pages 15-17

1. 6.8 cm
The total length of the two known sides is 3.8 + 7.4 = 11.2 cm. If the perimeter is 18 cm, then the third side must have length 18 – 11.2 = 6.8 cm.

2. 54 000 miles
54 278 is closer to 54 000 than 55 000. So 54 278 miles rounded to the nearest thousand miles is 54 000 miles.

3. C
'2 out of every 3' means $^{2}/_{3}$, which is around 66.6%. So 'nearly 2 out of every 3' is best matched by 64%.

4. 138°
The sum of the angles in a quadrilateral is 360°. The sum of the three given angles is 90 + 90 + 42 = 222°. This means angle X must be 360 – 222 = 138°.

5. 405 g
To make 7 cakes, Caley will need 7 × 85 = 595 g of flour (use partitioning here). The packet of flour originally contains 1 kg = 1000 g. So there will be 1000 – 595 = 405 g left.

6. D
The height of the stack = $6 \times 2\,^{1}/_{4}$.
$6 \times 2 = 12$ and $6 \times {}^{1}/_{4} = {}^{6}/_{4} = {}^{3}/_{2} = 1\,^{1}/_{2}$.
So the height of the stack is $12 + 1\,^{1}/_{2} = 13\,^{1}/_{2}$ m.

7. 30 cm²
The horizontal line of symmetry divides the sign into 2 smaller triangles, each with a base of 10 cm and a height of 6 ÷ 2 = 3 cm. The area of one of these triangles is $^{1}/_{2} \times 10 \times 3 = 5 \times 3 = 15$ cm². So the area of the whole sign is 2 × 15 = 30 cm².

8. C
The original investment gets multiplied by 4, and then by 2.5. So at the end of Year 2 he has £135 × 4 × 2.5 = £135 × 10 = £1350.

9. 14
The number of buses travelling north is 49 – 31 – 7 = 11. So the total number of buses Ciara saw is 11 + 3 = 14.

10. A
The total number of cars was 80 – 14 – 15 = 51. So the number of cars travelling south was 51 – 31 = 20. This means the fraction of the vehicles that were cars travelling south was $^{20}/_{80}$, which is the same as $^{1}/_{4}$.

11. 25%
In total, Ciara saw 15 + 9 = 24 lorries. In total she must have seen 80 + 9 + 7 = 96 vehicles. So the fraction of lorries she saw was $^{24}/_{96}$, which simplifies to $^{1}/_{4}$. As a percentage, this is 25%.

12. A
When $s = 10$, $d = 10 \times ({}^{1}/_{100} \times 10 + 1)$
$= 10 \times ({}^{1}/_{10} + 1) = 10 \times (0.1 + 1) = 10 \times 1.1 = 11$ m.

Test 6 — pages 19-21

1. 56
Subtract 34 from 90 by using partitioning.
34 = 30 + 4. 90 – 30 = 60, and 60 – 4 = 56.

2. C
A tetrahedron and a triangular prism are both 3D shapes, so they can't have three sides. All the angles are different, so it can't be an isosceles or equilateral triangle. So it must be a right-angled triangle.

3. D
Placing the numbers in ascending order you get: 18, 71, 184, 871, 1480, 1784, 4810. There are seven cards, so the middle one is the fourth one along, which is 871.

4. 850 ml
$^{1}/_{4}$ of 1 litre is 250 ml, so $^{1}/_{4}$ of 5 litres is 5 × 250 = 1250 ml (you can use partitioning to do this). You need to subtract 400 from this: 1250 – 400 = 850 ml.

5. B
The odd-numbered flats are shown in blue, so look for the biggest blue bar. This is the bar representing white doors.

6. 24.5 m
In total there are 7 white doors. If there's one on each floor then the whole block is 7 × 3.5 m tall.
7 × 3 = 21 and 7 × 0.5 = 7 ÷ 2 = 3.5, so the block is 21 + 3.5 = 24.5 m tall.

7. C
In total there are 12 'Other' coloured doors.
$^{1}/_{3}$ of 12 is 4, so $^{2}/_{3}$ of 12 is 2 × 4 = 8 yellow doors.
Add up all the bars to find the total number of doors. 14 + 7 + 10 + 5 + 12 = 48. So $^{8}/_{48}$ of the doors are yellow. This is the same as $^{1}/_{6}$.

8. B
There are 3 × 60 = 180 seconds in 3 minutes, so 3 minutes 24 seconds is 180 + 24 = 204 seconds. This is approximately 200 seconds, and 77 is approximately 80. So the motor spins approximately 200 × 80 = 16 000 times. The only answer near this is B.

9. 50 cm

There are 8 whole sides in the perimeter, which is $5 \times 8 = 40$ cm. The two partial sides on the right must add up to 5, and the two partial sides on the left must also add up to 5. So the total perimeter is $40 + 5 + 5 = 50$ cm.

10. 175 cm²

Each square's area is $5 \times 5 = 25$ cm². There are 4 squares shown, which have an area of $4 \times 25 = 100$ cm². Three more squares have an area of $3 \times 25 = 75$ cm². So in total the new shape's area is $100 + 75 = 175$ cm².

11. Week 5

In Week 1 he puts in £50, so in Week 2 he puts in $50 \div 2 =$ £25. In Week 3 he puts in £12.50, in Week 4 he puts in £6.25 and in Week 5 he wants to put in £3.125. This contains half a penny.

12. A

Selma is $x + 5$ years old. Karl is twice this, which is $2 \times (x + 5)$, which can be written $2(x + 5)$.

Practice – Short Maths Problems

Test 3 — pages 8-10

1. B
There are five divisions on the number line between 7.3 and 7.4, so each division represents 0.02. $7.3 + (3 \times 0.02) = 7.36$, so 7.36 is three divisions after 7.3.

2. 70 cm
The ribbon is $2.8\,m = 2.8 \times 100 = 280$ cm long. $280 \div 4 = 70$, so the length of each piece is 70 cm.

3. 720 806
Using column subtraction: $721306 - 500 = 720806$

4. D
400 mm and 0.4 m are too short to be the height of a lorry. 40 m and 0.4 km are too tall. 4 m is the only sensible option.

5. 10.02
The numbers in order from highest to lowest are 10.9, 10.19, 10.02, 9.92 and 9.2. The middle value is 10.02.

6. B
Obtuse angles are larger than 90° and smaller than 180°, so the shape contains only one obtuse angle.

7. A
1 hour = 60 minutes, so there are $3 \times 60 = 180$ minutes in 3 hours. $180 \div 20 = 9$, so 20 minutes is $^1/_9$ of 3 hours.

8. C
More than $^1/_2$ (50%) but less than $^3/_4$ (75%) of the chart is shaded blue, so 60% is the best estimate.

9. 45
Work your way through the multiples of 15 until you reach a multiple of 9. $15 \times 3 = 45$ and $9 \times 5 = 45$, so 45 is the lowest common multiple of 15 and 9.

10. 49
X = 10, L = 50 (so XL = 40) and IX = 9, so XLIX = 49.

11. B
DID is the only word with a horizontal line of symmetry.

12. 175 g
Cream for 1 person $= 280\,g \div 8$. $280 = 240 + 40$, so $280 \div 8 = (240 \div 8) + (40 \div 8) = 30 + 5 = 35$ g.
Cream for 5 people $= 5 \times 35 = (5 \times 30) + (5 \times 5) = 175$ g.

13. E
$^2/_3 \times {}^5/_8 = {}^{10}/_{24}$, which simplifies to give $^5/_{12}$.

14. (6, 5)
The sides of the square are 4 units long, so the centre of the square is 2 units up and 2 units right from its bottom left corner at (4, 3). The coordinates of this point are (6, 5).

15. 320 cm³
5 stacked cubes have a height of $5 \times 4 = 20$ cm.
Area of base $= 4 \times 4 = 16$ cm.
Volume of 5 cubes $= 16 \times 20 = 16 \times 2 \times 10 = 320\,cm^3$.

16. D
The differences between consecutive terms are 12, 10 and 8, so the difference is decreasing by 2 each time.
The 4th term is 8 less than the 3rd term. So the 5th term must be $8 - 2 = 6$ less than the 4th term. $48 - 6 = 42$.

17. 8
$6x - 6 = 42$. Add 6 to both sides: $6x = 42 + 6 = 48$.
Now divide both sides by 6 to find x: $x = 48 \div 6 = 8$.

18. 20
The mean is 21, so the sum of the numbers is $21 \times 5 = 105$. The first four numbers add up to $17.5 + 26 + 22.5 + 19 = 85$, so the fifth number must be $105 - 85 = 20$.

19. 352
First do the calculation inside the brackets. Then the multiplication and division can be done in either order:
$32 \times (8 + 14) \div 2 = 32 \times 22 \div 2 = 32 \times 11 = 352$.

20. B
There are 31 days in August and 30 days in September, so October 13th 2016 is $11 + 30 + 13 = 54$ days after August 20th of the same year.

21. 44
Angles around a point always add up to 360°, so:
$2a + 110 + 90 + 72 = 2a + 272 = 360°$. If $2a + 272 = 360$, then $2a = 360 - 272 = 88$. So $a = 88 \div 2 = 44$

22. A
The diameter of a circle is twice its radius, so the diameter of a circle with a radius of $2.5x + 5$ is $2(2.5x + 5) = 5x + 10$.

Vocabulary:

Vocabulary 3

Exercise A

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

Exercise B

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

English – Comprehension

PAGES 46 - 53 — ASSESSMENT TEST 3

1. B — In the passage it says that Bessie came into Jane's room at five o'clock, but Jane had "risen half-an-hour before her entrance".
2. A — In the passage it says that Bessie tried "in vain" to get Jane to have some boiled milk and bread. This means that Bessie was unsuccessful in persuading Jane to eat any breakfast.
3. C — In the passage it says that Jane put on her clothes "by the light of a half moon just setting".
4. A — Jane says that Mrs Reed had told her that she 'need not disturb her in the morning".
5. B — Jane says that Mrs Reed had "not been my friend but she has been my foe". This shows that she did not like Mrs Reed
6. B — The word which best describes Bessie is helpful because she helps Jane to prepare for her journey.
7. B — In the passage, Jane is "excited with the thoughts of a journey".
8. D — The passage does not mention that Mrs Reed is Jane's aunt.
9. B — "pressed" is closest in meaning to 'encouraged'.
10. A — "hardly" means the same as 'only just'.
11. B — Another word for "foe" is 'enemy'.
12. C — "narrow" is an adjective because it describes a noun (the window).
13. C — "children" is a common noun because it is the name for a kind of person.
14. E — "with" and "from" are the prepositions in this sentence.
15. A — In the passage Cornwall's roads are described as "steep" which is the opposite of 'flat'.
16. B — "brooding" implies that Bodmin Moor is dark and "granite heights" are rocky outcrops.
17. E — A "hearty pub lunch" is the only food that is mentioned in the passage — there is no mention of delicious seafood.
18. A — King Arthur was said to have been born at Tintagel which is perched above "wave-battered cliffs", which shows that it is by the sea.
19. C — It means that there is lots of evidence of Cornwall's history.
20. E — "A wash with Celtic heritage" means that there is lots of evidence of Cornwall's Celtic past.
21. E — The passage says that there are "gently-sloping beaches" in the south and a "rugged" coastline in the north. This shows that the coastline in the north and the south is different.
22. D — You would find this in a travel brochure because it is persuading the reader to visit Cornwall
23. A — "isolated" is closest in meaning to 'remote'.
24. C — In this sentence the word "meander" could most accurately be replaced by 'twist and turn'.
25. B — "intrepid" is closest in meaning to 'courageous'.
26. A — This is an example of alliteration because the 'b' sound is repeated
27. A — This is an example of a metaphor because Cornwall's history is described as being a treasure trove.
28. C — These words are adjectives because they describe nouns.
29. N — There are no mistakes in this line
30. D — 'sustane' should be 'sustain' — the ending should be 'ain'.
31. D — 'necessery' should be 'necessary' — the ending should be 'ary'.
32. A — 'approximatley' should be 'approximately'. You add the suffix 'ly' to the root word 'approximate' to form 'approximately'.
33. B — 'breath' should be 'breathe' — there is an 'e' at the end when the word is the verb 'breathe'.
34. A — 'tempriture' should be 'temperature' — there should be an 'e' between the 'p' and the first 'r'.
35. C — 'tomorrow' is correct because the sentence is written in the future tense.
36. C — 'in' is the correct word to describe the fair's location.
37. D — 'will' is the correct word to talk about the future.
38. B — 'from' is the word that makes most sense in this sentence.
39. D — 'out' is the correct word. It completes the phrase 'look out for'.
40. B — 'won' is the correct past tense form of 'to win'.
41. A — 'resident's' should be 'residents'. It does not need an apostrophe because the 's' is added to make the word plural.
42. N — There are no mistakes in this line
43. D — There needs to be a comma after 'Price' rather than a colon.
44. C — Speech marks are needed after 'cat' because it is the end of Mr Price's speech.
45. B — 'bears' needs an apostrophe before the 's' because the growl belongs to the bear.
46. N — There are no mistakes in this line
47. C — There needs to be a closing comma after 'Jones'.
48. D — There should not be a comma after 'tired' because there is an 'and' to separate the adjectives.
49. N — There are no mistakes in this line
50. B — 'lets' should have an apostrophe before the 's' because it is the shortened version of two words, 'let' and 'us'.

Cloze Sentences Test 55

Q1	A realise	Q5	B glide
Q2	C powered	Q6	B possesses
Q3	E region	Q7	C elaborate
Q4	A referred	Q8	E results

Cloze Select the Word Test 56

Q1	hole	Q6	three
Q2	layer	Q7	surface
Q3	Earth	Q8	molten
Q4	shaft	Q9	centre
Q5	gases	Q10	planet

Cloze Select the Word Test 57

Q1	colour	Q6	clutched
Q2	agreed	Q7	mattress
Q3	Reluctantly	Q8	window
Q4	quilt	Q9	towards
Q5	jolt	Q10	expanse

Verbal Reasoning

Paper 5 (pages 18–22)

1 **foe**
2 **heir**
3 **rough**
4 **calm**
5 **middle**

6 **milk, water** A 'jug' can hold 'milk' in the same way a 'glass' can hold 'water'.
7 **come, join** 'Leave' is the opposite of 'come' in the same way as 'part' is the opposite of 'join'.
8 **scales, feathers** 'Fish' are covered in 'scales' in the same way as a 'bird' is covered in 'feathers'.
9 **you, me** 'Yours' belongs to 'you' in the same way as 'mine' belongs to 'me'.
10 **odd, normal** 'Conventional' is the opposite of 'odd' in the same way as 'abnormal' is the opposite of 'normal'.
11 **block** A block is both solid and a lump; a block can also mean an obstacle or a stop.
12 **fare** A fare can mean the same as a charge or a price; 'fare' is also another name for a meal or food.
13 **crop** To crop is to clip or trim; the noun 'crop' can also be used to mean the same as the nouns 'yield' and 'produce'.
14 **post** A post can mean the same as a column or a pole; a post is also a position or an assignment.
15 **mind** 'Mind' is associated with brain and head; to mind something is the same as to resent or dislike it.
16 **30** 7 x 6 = 42 and 30 + 12 = 42
17 **58** 9 x 9 = 81 and 11 + 58 + 12 = 81
18 **7** 14 ÷ 7 = 2 and 10 – 8 = 2
19 **47** 14 + 16 = 30 and 47 – 13 – 4 = 30
20 **5** 5 x 2 = 10 and 20 ÷ 5 + 6 = 10
21 **bad** There is no 'b' in 'dread', so this word cannot be made from its letters.
22 **tease** There is only one 'e' in 'spatter', so this word cannot be made from its letters.
23 **matter** There is only one 't' in 'cremate', so this word cannot be made from its letters.
24 **truce** There is no 'u' in 'carpenter', so this word cannot be made from its letters.
25 **stems** There is only one 's' in 'distemper', so this word cannot be made from its letters.
26 **highlight**
27 **ringlet**
28 **farewell**
29 **overboard**
30 **crossbow**
31 **tour** We tried **to ur**ge our team to win.
32 **soar** Out of breath, the last rower lent over hi**s oar**.
33 **chin** 'Whi**ch in**formation is correct?' queried the teacher.
34 **seat** When you are seated, plea**se at**tach the safety belt.
35 **scan** For old people, climbing step**s can** be difficult.
36 **sorted**

37 **haven**
38 **mined**
39 **print**
40 **bride**
41–45 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.
41 **car, lane, pedestrian**
42 **books, desk, lesson**
43 **Pink, colour, scarf**
44 **scene, streets**
45 **darkness, thief, window**
46 **KO** Each letter in the first pair moves forward by two letters in the second pair.
47 **DWE** The first and third letter in the first trio moves forward by one letter. The second letter in the first trio moves back by one letter.
48 **KPD** The first and second letters in the first trio move forward by two letters. The third letter in the first trio moves back by six letters.
49 **HJH** Each letter in the first trio moves forward by two letters in the second trio.
50 **LF** The first letter in the first pair moves back by two letters in the second pair. The second letter in the first pair moves forward by two letters.
51 **BEAR, BEAT**
52 **BAND, BANK**
53 **FOAM, FORM**
54 **PATS, PASS**
55 **HAND, HIND**
56–57

H	A	M
O	R	E
D	E	N

58–59

A	L	E
S	E	W
H	O	E

60 **21, 57** The number added increases by 3 each time: +3, +6, +9, +12 + 15, +18.
61 **8, 13** There are two sequences which alternate. In the first sequence, starting with 7, the number increases by 2 each time. In the second sequence, starting with 8, the number increases by 8 each time.
62 **100, 79** Each number in the sequence decreases by 7.
63 **saddle, tyre** Mia's bike had a flat tyre.
64 **east, west** As the sun set in the west, Ali watched the shadows lengthen.
65 **grass, wall** The high wall that surrounded the castle was designed to keep out the enemy.
66 **cushion, needle** I find it difficult to thread my needle in my sewing lessons.
67 **trumpet, nose** Take a tissue and blow your nose rather than sniff.
68–72 Place the letters of the word below or above the symbol to make coding and decoding easier:

@	=	=	X	@	£	@	+	÷	X
A	P	P	E	A	R	A	N	C	E

68 **CAPE**
69 **ARE**
70 **= £ X X +**
71 **+ X @ £**
72 **= £ @ + ÷ X**
73 **RULE**
74 **PLASTER**
75 **PLEASE**
76 **TRUST**
77 **OCEAN**
78 **25** 7 + 2 + 5 + 6 + 5
79 **29** 4 + 8 + 6 + 2 + 9
80 **28** 3 + 8 + 6 + 6 + 5

Paper 6 (pages 23–27)

1 **61** 10 + 20 + 12 + 6 + 8 + 5
2 **37** 12 + 6 + 4 + 10 + 5
3 **60** 8 + 12 + 6 + 4 + 20 + 10
4 **49** 10 + 8 + 6 + 4 + 4 + 5 + 12
5 **46** 20 + 12 + 6 + 8
6 **FALSE**
7 **TRAPS**
8 **TRACE**
9 **BRUSH**
10 **TABLE**
11 **PHRASE**
12 **real** They were all caught in a rainstorm.
13 **hats** He hoped that something would turn up.
14 **they** The youngest toddler cried for his mother.
15 **tool** Luckily their delays were not too lengthy.
16 **fort** I want to run in the race for the charity.
17–21 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.
17 **terrace, roses, pruning**
18 **book, exciting, down**
19 **drummed, car roof, school**
20 **savage, postman, letters**
21 **day, water, plants**
22 **le** purple, league
23 **ch** branch, charge
24 **sh** perish, shield
25 **ic** mosaic, icicle

26 **en** fasten, engine
27 **AE, EI** Each letter in a pair moves forward by one letter in the following pair.
28 **XM, UP** The first letter in a pair moves back by one letter in the following pair. The second letter in a pair moves forward by one letter.
29 **4X7, 6T5** The first number in a trio increases by 1 each time. The letter in the middle of a trio moves back by two letters each time. The last number in a trio decreases by 1 each time.
30 **B6, C13** The letters are in a sequence of two As, two Bs, two Cs. For the numbers, the number added increases by 1 each time: +1, +2, +3, +4, +5.
31 **11, 19** The sequence alternately adds 8 and subtracts 6: +8, -6, +8, –6, +8.
32 **rival, opponent**
33 **spine, backbone**
34 **sure, certain**
35 **bluff, pretend**
36 **brave, fearless**
37 **NEST, TENS**
38 **STEP, PEST**
39 **LEAP, PALE**
40 **WEST, STEW**
41 **LAIR, RAIL**
42 There **was** a funny smell **in** the kitchen.
43 I was three **when** my sister **was** born.
44 He **was** a very **brave** man.
45 She **sieved** the flour **into** the bowl.
46 We **will** soon **start** school.
47–51 Place the letters of the word below or above the symbol to make coding and decoding easier:

T	E	A	C	H	E	R
◗	~	❍	●	▮	~	■

47 **CHEAT**
48 **ACHE**
49 **TRACE**
50 ● ■ ❍ ◗ ~
51 ❍ ■ ● ▮
52 **TAR** stared
53 **EAR** heard
54 **TON** tongue
55 **OAR** roared
56 **CUT** acute
57 **cupboard**
58 **crossword**
59 **foreground**
60 **deadlock**
61 **forgive**
62–66 Solve these questions by looking at the first set of three and working out how the first and last numbers have been used to arrive at the middle number. Apply this to the second set of three and see if it works. If it does, apply it to the last set.
62 **14** 9 + 2 = 11 and 7 + 5 = 12, so 8 + 6 = 14
63 **3** 15 ÷ 3 = 5 and 30 ÷ 5 = 6, so 24 ÷ 8 = 3
64 **15** 2 × 2 + 3 = 7 and 2 × 6 + 7 = 19, so 2 × 4 + 7 = 15
65 **8** 8 + 9 + 1 = 18 and 3 + 4 + 1 = 8, so 6 + 1 + 1 = 8
66 **9** (5 x 4) ÷ 2 = 10 and (6 × 4) ÷ 2 = 12, so (9 × 2) ÷ 2 = 9
67–71 A table is the easiest way to sort the information, like this:

	Ballroom	Judo	Fencing	Tap
Anne	✓	✓		✓
Emma	✓	✓	✓	
Lucy		✓	✓	
Caroline	✓			✓

67 **Anne**
68 **Emma**
69 **fencing**
70 **tap dancing**
71 **two**
72 **LAKE, LIKE**
73 **PILE, PILL**
74 **WOOD, WORD**
75 **COST, MOST**
76 **BLOT, BOOT**
77–80 Arrange the words in a grid to make it easier to put them in the correct alphabetical order.
77 1st is **soften;** 2nd is **lighten;** 3rd is **moisten;** 4th is **fasten**

N	E	T	F	O	S	
N	E	T	H	G	I	L
N	E	T	S	I	O	M
N	E	T	T	A	F	

78 1st is **comical;** 2nd is **musical;** 3rd is **official;** 4th is **final**

L	A	C	I	M	O	C	
L	A	C	I	S	U	M	
L	A	I	C	I	F	F	O
L	A	N	I	F			

79 1st is **oddment;** 2nd is **segment;** 3rd is **catchment;** 4th is **fitment**

T	N	E	M	D	D	O		
T	N	E	M	G	E	S		
T	N	E	M	H	C	T	A	C
T	N	E	M	A	T	I	F	

80 1st is **dancing;** 2nd is **saying;** 3rd is **flying;** 4th is **crying**

G	N	I	C	N	A	D	
G	N	I	Y	A	S		
G	N	I	Y	L	F		
G	N	I	Y	R	C		

Non-Verbal Reasoning

Test 3 Answers

Section 1 : Analogies

Q1 (c) : shape is rotated 180°
- looks like the same shapes with the inner arrows swapped
- that won't work with the 3rd figure – better to say its rotated 180°
- look for black circle at right, white at left – rule out (a) & (d)
- arrows will still go clockwise – rule out (b) & (e) leaving answer = (c)

Q2 (e) : 2 small regular hexagons - outer dashed, inner rotated
- irregular 4-sided figure gives 2 squares (i.e. regular quadrilaterals)
- 3rd is 6-sided so we're looking for hexagons - rule out (a) & (d)
- outer should be dashed – rule out (c) & compare (b) & (e)
- outer should be rotated relative to inner - rule out (b) leaving (e)

Q3 (e) : lower right sector of (3) with colour reversal
- 2nd is the lower right of 1st with colour reversal & enlargement
- look for white oval (not (b)) on left diagonal (not (c) or (d))
- compare (a) and (e) - (a) is a kite shape so take (e)

Q4 (c) : inner rotates 90° and colour swaps; outer adds copies on all 4 sides
- outer shape gets copies left, right, up & down - rule out (a) - diagonal copies
- inner rotates 90° - rule out (d)
- inner colour swaps - rule out (b) & (e) leaving (c)

Q5 (d) : figure rotates 180°, small solid figure becomes transparent
- looks like it rotates 180° - rule out (c)
- small figure at top should be transparent – rule out (e)
- that's all so compare the rest – top figure should point up – rule out (a)
- compare (b) & (d) – bottom figure should point up – answer = (d)

Q6 (a) : top left of frame lost and shapes combined in each row
- shapes in 2nd are made by combining shapes in each row – rule out (b) & (e)
- frame is shaded in empty squares with top left missing – rule out (c) & (d)
- check out (a) – looks good so answer = (a)

Q7 (b) : figures flip horizontally; central figure colour swaps
- circles are mirrored so look for horizontal flip of diamonds - rule out (a) & (c)
- central figure colour swaps - all seem OK so compare them
- (d) has a solid centre line & (e) has inverted top figure
- (b) looks fine so answer = (b)

Q8 (d) : circles to triangles; add one or lose one
- circles become triangles – all have
- add one to the left, take one from the right
- look for 4 black triangles on the left – only (d) fits
- 3 on the right looks good so answer = (d)

Q9 (c) : 4 lines of diamond make a star (4 lines = 8 points)
- pentagon has become a 10 point star made from 5 lines intersecting
- look for 8 point star - rule out (b) (d) & (e)
- compare (a) & (c) - (a) has bold vertical so answer = (c)

Q10 (e) : centre section of original inverted with overlap region black
- 1st is inverted centre section of 2nd with the overlap region turned black
- rule out (b) (grey) & (d) (not inverted)
- (a) has a centre leg, (c) is asymmetric leaving (e)
- check (e) is OK - looks good, answer = (e)

Q11 (b) : figure and its shading both rotate 90° anti-clockwise
- figure has rotated 90° anti-clockwise - rule out (c) & (d)
- shading has rotated with the figure - 90° will make it vertical - rule out (a)
- compare (b) & (e) - shading too close in (e) so answer = (b)

Q12 (b) : outer figure is duplicated then flipped vertically; inner figures colour reverse
- start with the easy bit - same inner figures only colour reversed - rule out (c) & (d)
- tricky - 2nd has an inverted/rotated arrow on top
- look for a flipped parallelogram on top – not (a)
- leaves (b) & (e) but (e) is hopeless so answer = (b)

Q13 (d) : number of sides of regular polygon 1 less than circles
- 3rd is clearly like 2nd so this is relationship of 2nd to 1st
- shape changes but can't see a pattern so ignore for now
- 6 white circles in 2nd give a pentagon in 1st - 6 gives 5
- 5 circles in 3rd should give 4 sided figure - rule out (b) (c) (e)
- compare (a) and (d) - prefer (d) as it is a regular figure like 1st

{You are looking for a relationship between the 1st & the 2nd – it's not always going to be that the 1st figure becomes the 2nd}

Q14 (b) : left pair V-flip & colour change - white to horizontal, black to white, vertical to white & grey to vertical stripes
- pair on left have V-flipped – all have the bump on top
- black and vertical shading have become white – look for white top & bottom – (b) & (c)
- grey becomes vertical shading / white becomes horizontal – need horizontal over vertical
- rules out (c) – (b) looks good so answer = (b)

Q15 (d) : shape H-flipped, small shapes at bottom go black
- the shape is H-flipped (or rotated 90°) – rule out (a) & (b)
- small shape on the bottom of the larger shape becomes black
- only (d) has a black so answer = (d)

Q16 (c) : figures rotate 180°; small then H-flips
- F is rotated 180° - rule out (b) & (d)
- small figure rotates with large and then H-flips - rule out (a)
- compare (c) & (e) - white dot in (e) so answer = (c)

Section 2 : Series

Q1 (e) : + alternates with x and alternates position; lines in arrow increase by 1
- + signs alternate with x - rule out (b) – also orientation alternates – rule out (d)

- number of lines in arrow increases each time - need 3 so rule out (c)
- compare (a) & (e) - lines too spread out in (a) so answer = (e)

Q2 (a) : stars decrease by 1; central shape rotates 45° clockwise
- number of stars top & bottom decreases by 1 – rule out (b) & (e)
- central shape rotates 45° clockwise - arrows will be on right diagonal – not (c)
- compare (a) & (d) – don't want black arrows so answer = (a)

Q3 (a) : stick at bottom, white rectangle
- base alternates black & white - rule out (d) – not sure about (a) & (c) so circle them
- stick rotates 45° clockwise - rule out (b) & (e) – (a) & (c) looks good now
- compare (a) & (c) - stick shouldn't be on top of circle - rule out (c) leaving (a)

Q4 (d) : lines appear and then rotate in 30° steps, left before right
- make a triangle out of set of lines in steps – 2nd will have 2 lines – not (b)
- (a) is wrong way up, lines don't meet in (c) & prefer left before right
- compare (d) & (e) - (e) has a square on the end of horizontal so take (d)

Q5 (d) : outer balls move 1 side clockwise, ovals move to centre then back again
- white ovals move to centre then out again - rule out (c) (has blacks outside)
- outer balls move clockwise 1 face - rule out (b) (no black) & (e)
- compare (a) & (d) - ovals not right in (a) leaving (d)

Q6 (b) : alternating pattern so 3rd looks like 1st and 5th
- squares decrease by 1 so there should be 2
- none of the answers have 2 so think again
- could it be alternating – 3rd would look like 1st & 5th – yes, answer = (b)

Q7 (b) : fork alternates & rotates 45° clockwise; arrows in sequence
- fork is rotating 45° clockwise so should point down – rule out (d)
- number of teeth alternates so we need 4 – rule out (a) & (c)
- compare (b) & (e) – arrow pattern is a sequence so should be like 2nd – answer = (b)

Q8 (c) : alternately white arrow goes black then new white arrow added clockwise
- alternating – white arrow goes black then new white arrow added
- looking for an extra white arrow to be added clockwise - not (a) or (b)
- compare (c) (OK), (d) (line without arrow head) & (e) (base transparent) so answer = (c)

Q9 (d) : arrow moves clockwise round corners; dot in circles moves clockwise; dot on lines moves 2 lines anti-clockwise
- dot in the circle is moving clockwise - should be bottom left - rule out (e)
- dot on the line is going anti-clockwise by 2 lines - should be on left - rule out (b)
- arrow moves clockwise round corners and points backwards- rule out (c) (direction)
- leaves (a) & (d) - circle dot in wrong part of circle in (a) so answer = (d)

Q10 (e) : dot moves anti-clockwise & changes colour, triangle clockwise, centre loses then gains 2 ends
- can't see what the main figures are doing so leave for now
- triangle moves clockwise & always points outwards - rule out (a) & (c)
- circle moves anti-clockwise round corners & changes colour - rule out (b) & (d)
- leaves (e) without needing to understand the central figures (loses 2 squares)

Q11 (b) : figure rotates anti-clockwise 50°; ball moves round figure & figure divided into 5
- getting more lines on figure - not quite its more sectors - need 5 so rule out (e)
- figure is rotating – hard to follow so colour in the mouth – (c) & (d) are wrong
- compare (a) & (b) – differ in position of ball
- ball is moving anti-clockwise round the shape – so answer = (b)

Q12 (e) : figure H-flips; diagonal of 6 circles gets an extra black; other diagonal alternates between 4 & 2
- can see a line of 6 circles alternating orientation - need right diagonal so not (b)
- blacks in line of 6 increase by 1 from the top so need 4 - rule out (a) & c)
- compare (d) & (e) - differ in circles on the opposite diagonal
- other diagonal alternates between 2 & 4 circles - we need 2 so answer = (e)

Q13 (b) : figure rotates 45° clockwise and loses an outer symbol
- easier to view from right to left – alternates square & diamond so rule out (e)
- shading rotating – will need right diagonal – rule out (a) & (d)
- need 4 symbols outside so answer = (b)

Q14 (d) : contents rotate anti-clockwise 1 point; missing dot moves clockwise 2 places
- star constant, contents rotate anti-clockwise 1 point – rule out (b) & (c) (white oval)
- missing dot moves 2 points clockwise – rule out (e)
- compare (a) & (d) - (a) has a white dot so take (d)

Q15 (b) : figures rotate clockwise; black one rotates anti-clockwise
- always 1 black – which one rotates anti-clockwise
- – should be bottom right – rule out (c) & (d)
- follow the circle – moves clockwise, should be bottom left – rule out (e) (oval)
- compare (a) & (b) – orientation of star – never changes so answer = (b)

Q16 (a) : shading alternates position, arrows – lose 4 on alternate frames & alternate in and out
- shading swaps so need right diagonal at top – rule out (b) & (c)
- from right to left arrows go 0 – 4 – 4 - ? – 8 so look for 8 arrows – not (e)
- compare (a) & (d) - arrows alternate pointing in and out so answer = (a)

Section 3 : Belongs With

Q1 (e) : 3 different sized overlapping squares – no double overlaps

- 3 different sized squares overlap each other – rule out (a) (b) (c) & (d)
- too easy – does (e) look OK? – yes so answer = (e)

Q2 (b) : shapes overlap the shield, not touching each other

- both use same 4 shapes – rule out (d) as circle too small
- each small shape overlaps the shield – rule out (a) (c) & (e)
- leaves (b) – looks good

Q3 (b) : lines intersect to make the small black shape

- some lines and a little black shape – rule out (d) & (e)
- 3 lines and a black triangle or 4 lines and a quadrilateral – all OK
- not (a) - lines don't intersect
- compare (b) & (c) - must be how the lines intersect
- YES – the little black shape should be like the intersection – answer = (b)

Q4 (e) : 4 identical shapes (3 white, 1 black) in a circle

- circle with 3 white shapes & 1 black in it – rule out (a) & (d)
- shapes are identical – rule out (c)
- compare (b) & (e) – 1 of the stars points a different way so answer = (e)

Q5 (b) : touching rectangles, one contains black triangle & 2 whites at base

- 2 rectangles touch via the end of 1 of them – rule out (a)
- 1 of them contains a black triangle with 2 whites at its base – not (c) or (d)
- compare (b) & (e) – black triangle points the wrong way in (e) so answer is (b)

Q6 (e) : each corner of inner touches the outer figure at a white circle

- inner figure touches outer at each corner - (a) & (c) don't so rule them out
- black & white circles alternate round the outer - (b) blacks in wrong place
- compare (d) & (e) - should be white where inner touches outer; answer = (e)

Q7 (d) : 4 rectangles (2 black, 2 white) overlap an oval

- 2 white, 2 black rectangles overlap an oval – not (a) (b) or (c)
- compare (d) & (e) – whites should be transparent so answer = (d)

Q8 (b) : triangle contains an 'I'; small triangle with black ball

- big triangle contains an 'I' – rule out (a)
- overlapping figure is a small triangle with black dot – rule out (c) & (e)
- compare (b) & (d) – black dot not on triangle in (d) so answer = (b)

Q9 (d) : inverted copy lower left; black oval lower right; G at top

- different outer figures but same inners at top and lower right
- rule out (b) (oval at left) (c) (letter messed up) & (e) (oval rotated)
- compare (a) & (d) – lower left should be inverted outer so answer = (d)

Q10 (b) : 3 white rectangles decreasing in size with 2 small black rectangles on the large

- 3 rectangles touching & in size order – rule out (d) & (e)
- 2 little black rectangles on the largest – rule out (a) & (c)

Q11 (e) : mirrored around thin central dividing line

- easy - figures are symmetrical about the dividing line – any orientation
- outer figure should be symmetrical about the line - (a) isn't
- inner figures should be symmetrical too - positions wrong in (d), shading wrong in (c)
- leaves (b) and (e) - dividing line is too thick in (b) so answer = (e)

Q12 (a) : opposing white and black petals; black line in stalk next to white petal and on the left

- flower has 2 white petals and 2 black petals opposite – rule out (d)
- stem is half black – rule out (c)
- black bit next to white petal – rule out (e)
- compare (a) & (b) – lowest petal on left should be white so answer = (a)

Q13 (a) : 4 sided shape, right diagonal shading & normal outline with opposite sides equal

- quadrilateral with right diagonal shading – rule out (b) & (e)
- sides perhaps - opposite sides are equal so rule out (d)
- compare (a) & (c) – thin outline for (c) so answer = (a)

Q14 (b) : 3 identical shapes overlapping at corners in a chain

- 3 identical polygons overlapping - not (c) (1 is small) or (e) (rounded shapes)
- compare the others - (d) is wrong - 1 shape is on top
- look again at the figures on the left - overlaps are always corner to corner
- (a) has a corner to side overlap so answer = (b)

Q15 (e) : 2 polygons with same number of sides; overlap has same number of sides

- 2 overlapping polygons with same number of sides - not (c) or (d) (4 & 5)
- rule out (b) as one of them is dashed
- compare (a) and (e) - both seem good so look at overlaps
- overlap has same number of sides as the main shapes so answer = (e)

Q16 (b) : outer shapes shared – inside rectangles (1 black) don't touch

- solid perimeter, with a dashed copy inside – rule out (d) & (e)
- 3 rectangles inside, 2 white & 1 black – rule out (c)
- compare (a) & (b) – little rectangles shouldn't touch so answer = (b)

Section 4 : Codes

Q1 (e) : U/P : top is shape at bottom; bottom is number of stars

- 2 L's on top - both have white circle at bottom & no other does
- unknown has white oval = U at top
- 2 Z's at bottom - both have 2 black stars - others have 3 or none
- unknown has 1 star so new letter - must be P so answer = (e)

Q2 (b) : P/E : top is symbol; lower is shading
- 2 G's at top, both arrows, no other arrows so top = symbol
- unknown is a plus sign = P at top
- 2 B's at bottom , both are white & no other is - lower = shading
- unknown is black = E: so answer = (b)

Q3 (e) : C/F : top is top of line; lower is bottom of line (ignore the oval)
- 2 O's at top - goes with arrow tails unknown has white circle = C
- 2 L's at bottom - goes with bottom of line
- unknown has arrow head so lower is F & answer = (e)

{Didn't need shading or position of oval – did not correlate with code letters}

Q4 (b) : T/B : top is top orientation; lower is bottom orientation
- 2 R's at goes with upper pointing right, unknown points up so upper = T
- 2F's below - both have lower pointing down
- unknown points right so lower = B & answer = (b)

Q5 (d) : R/L : upper is shape; lower is shading
- all different at top - leave for now but probably the shape
- 2 U's at bottom - both are grey - no others are
- unknown is white so lower is L
- choice of S or R at top - R fits with heart shape so answer = (d)

Q6 (d) = K/N : top is position; lower is orientation
- all different at top so do bottom letters first
- 2 N's go with orientation; unknown = N at bottom
- top letters differ, position of figures all different
- unknown is top right = K at top so answer = (d)

Q7 (a) : T/O : upper is black sector; lower is which ball is black
- 2 R's at top goes with black sector, no others have same black sector
- unknown is like (3) so upper = T
- 2 D's at bottom - goes with which ball is black
- unknown is all white - none like this so new letter - must be O = TO = (a)

Q8 (e) : P/H : top is pattern of circles at top; lower is arrow overlap
- start with lower letters, 2 H's / 2 R's - arrow hides diamond or not
- unknown has arrow on top of diamond so lower = H
- upper all different - must be shading pattern of circles
- 2 whites in unknown so top = P; answer = (e)

Q9 (c) : N/D : upper is corner piece; lower is number of lines (oval not coded)
- 2 G's at top - both have white square in corner - others don't
- unknown has arc in corner : N
- 2 S's at bottom - both have 3 lines and a black oval bottom left
- first frame also has black oval so lower is number of lines = D so answer = (c)

Q10 (a) : Z/V : upper is shape on left; lower is shading & circle on right
- all different at top - leave for now
- 2 N's at bottom - both have same combination at right
- unknown looks like (3) so lower = V
- shapes at left all different, upper is shape - diamond is Z & answer = (a)

Q11 (c) : L/Z : upper is line endings; lower is centre shape (ignore orientation & shading)
- 2 H's at top goes with centre shading but others both black with different letters
- 2H's must be line endings - we need squares so upper = L
- 2 E's at bottom goes with centre shape - diamond = Z
- orientation and centre shading not important - answer = (c)

{Just because H goes with white shading doesn't mean H codes for white – we have to check that the others don't have the same shading and different letters}

Q12 (e) : C/E : top is polygon; lower is horizontal dividing
- all different at top so sort out the bottom letters first
- 2 E's 2 Z's at bottom go with dividing line; unknown is dashed so bottom = E
- all different at top - all 4 arrows point different ways; 4 polygons also different
- either unknown is D (arrows) or C (polygons)
- could be D/E or C/E but D/E not available so top = C

{Sometimes the only way to crack the code is to make use of the available answers}

Q13 (d) : T/V : top is inner shape (not number); bottom is skew of outer figure
- all different at top so sort out the bottom letters first
- 2 O's 2 V's at bottom go with skew of parallelogram so bottom = V
- top letters all different - so are the inner figures
- unknown has circles like 1st even though number is different
- if the number matters it's a new letter, otherwise must be T at the top
- no (new)/V so answer is T/V = (d)

Q14 (e) : J/B : upper is white shape; lower is position of white shape
- 2 A's at top - both have white circle; unknown has a white plus = J
- 2 G's at bottom - both have white shape at top - others don't
- unknown has white shape in middle = B so answer is (e)

Q15 (a) : K/S : upper is position of large circles; lower is position of dot (ignore shading)
- 2 P's at top - vertical large circles or black dot?
- if it's dot colour then others would all be the same so it must be large circles
- unknown has diagonal pair at bottom right like 4th so upper is K
- 2 H's at bottom - has to be the dot position - unknown is mid left = S

Q16 (b) : L/Q : top is the total number of crosses; bottom is line position
- 2 J's at top go with the total number of crosses or line endings
- unknown has 4 crosses (new letter) and dot ending (top letter = M)
- no M as top letter so top is cross number; top letter is a new letter
- 2 N's at bottom go with line position; unknown like 3rd so bottom = Q
- answer = (new)/Q – must be L / Q so answer = (b)

Section 5 : Matrix

Q1 (c) : right to left rotates 90° clockwise
- goes right to left, rotation 90° clockwise – (b) or (c)
- compare – orientation of shading – shading rotates with shape = (c)

Q2 (b) : symmetrical about centre frame
- easy, symmetry - shapes around edge are the same at opposite sides
- missing frame will be like middle top= (b)

Q3 (e) : figures flip vertically, colour swap plus line at bottom
- vertically, colours swap and figures flip
- need white star top left & black square on line - not (d)
- sketch the flipped lines - not (b)
- line is added at bottom - not (c)
- compare (a) & (e) - black square wrong in (a) so answer = (e)

Q4 (c) : objects show symmetry around the centre
- first glance - symmetry around centre
- look for arc then + then 4 point star on left diagonal
- eliminate others to leave answer = (c)

{If the centre figure of 9 is symmetrical then symmetry is likely}

Q5 (c) : 90° clockwise, gets smaller & shading added
- rotates 90° clockwise so semi-circle will be on the right – not (a) or (b)
- gets smaller so rule out (e)
- compare (c) & (d) – need black semi-circle so answer = (c)

Q6 (c) : shading and size from verticals; shape from horizontals
- shapes from row, size from column – look for big square, rule out (b) & (d)
- columns determine the shading – only (c) is right

{Classic question – always check out the rows, columns and diagonals}

Q7 (c) : symbols reduce by 1; flip, colour change & rotation
- upwards, V-flips & symbols reduce by 1
- look for V-flip (rule out (e) & 5 symbols top and bottom – rule out (a)
- upper figures should be white and – rule out (b) & (d)
- leaves (c) – looks good so answer = (c)

Q8 (e) : 3 of each shape – 1 normal, 1 stretched vertically & 1 bold
- right diagonal pattern with same basic shape - rule out (a) (c)
- also a vertical pattern – column 2 is stretched vertically - column 3 is bold
- compare (b) (d) (e) - (b) is a V-flip, (d) is stretched vertically, answer = (e)

Q9 (d) : diagonally, circle gives a circle of circles
- diagonal pattern, triangle of triangles gives a dotted triangle
- look for a circle of circles - rule out (b) and (c)
- look at (a) (d) & (e) - (a) bold and normal so no thanks
- (e) is too small - leaves (d)

{triangle is a mix of orientations but makes no difference to circles }

Q10 (a) : top and bottom rows are the same with colour swap
- left & right of mid row are H-flips – top & bottom not like that
- top & bottom rows are the same with black/white colour swap
- (e) is nothing like it, (b) is flipped, (d) has a 5 point star so rule them out
- compare (a) & (c) - star should be white & drip black so answer = (a)

Q11 (c) : skewed to the left
- unusual - right figure is skewed to the left
- rule out (a) (skewed to right), (d) (flipped) & (e) (not skewed)
- compare (b) & (c) - arm points up in (b) leaving (c)

Q12 (c) : same shapes on right diagonals, rotated 45°
- right diagonals have same type of figure - not an A, so not (b)
- arrows series rotates 45° anti-clockwise up the diagonal
- need 45° anti-clockwise from mid bottom - ie horizontal - not (e))
- need horizontal rectangle with square at right - answer = (c)

Q13 (b) : bar at one end of rectangle becomes 8 point star & other figure V-flips & goes on top of rectangle
- downwards, pentagon V-flips so ovals figure will do the same - rule out (c)
- need 8 point star at end of rectangle - rule out (e) (6 points)
- star shouldn't be on top - rule out (d)
- compare (a) & (b) - rectangle should be behind ovals figure - take (b)

Q14 (e) : 6 crosses (series), arrow at the right, star at the left
- number of crosses increases by one for the whole matrix – need 6, rule out (c) & (d)
- where should the star and arrow be? – row determines height & style
- need up arrow at bottom (not (a)), star at mid height
- 1 at the left, 1 in the middle and 1 at the right in each row
- look for arrow at the right, star at the left – only (e)

Q15 (b) : same group of figures all rotated clockwise 90°
- rotate anti-clockwise about centre – star must be top left
- none of them fit – have to think again
- figures move clockwise horizontally or anti-clockwise vertically
- expect them to be at the top right – not (a) or (c)
- order of figures wrong in (d) so compare (b) & (e)
- shouldn't have a square so take (b) as the answer

{Be prepared to abandon your first idea if it doesn't work out}

Q16 (b) : same figures on left diagonals rotate 90° clockwise down the diagonal
- check diagonals - left diagonals same figure - not (a) or (c)
- figures rotate down the diagonal – should point right – rule out (e)
- compare (b) & (d) – triangle underneath in (d) so answer = (b)

Quick Lesson Recap

1. Write a pair of sentences, one in the active tense and one in the passive tense.

   a.

   b.

2. What is the 6th triangular number? **21**

3. What is 20% of 650? **130**

4. If B = 18 then what is 2B – B **= 18**

5. Workout P in **48 = 4P – 12** ? **15**

6. $(23 + 42 - 2 \times 3) + (16 - 7)^2$ **= 140**

7. What is process of elimination? How can it be used to help us in Non-verbal Reasoning? *(3 marks)*

8

Homework – Vocabulary to memorise

Vocabulary 3

Exercise A

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

Exercise B

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

Anagrams

Test 3

1.	t	I buy my meat from a local butcher.
2.	r	I forgot to take the rubbish out this morning.
3.	e	Your sincere apology meant a lot to me.
4.	k	I changed my locks because I lost my key.
5.	c	I have been in the school choir for over two years.
6.	z	The zebra is an amazing creature.
7.	g	The gap between the rich and the poor is growing.
8.	t	My tortoise will hibernate during the winter months.
9.	h	The church was packed with men, women and children.
10.	c	I find it really hard to accept a compliment.

Related Words

Test 3

1 robe

Solution: Each word in the top row of the grid can be joined to the word directly below it to make one new work, which is a piece of household furniture (e.g. 'ward' + 'robe' = 'wardrobe').

2 fir

Solution: The words in the top row of the grid are all verbs in the past tense. Each word rhymes with the word directly below it (e.g. 'were' rhymes with 'fir').

3 tie

Solution: Each prefix in the top row can be joined to the word directly below it to change its meaning to the negative / opposite. The other solutions make words when joined to 'un', but they are not negatives / opposite in meaning.

4 silent

Solution: Each of the words in the top row of the grid contains exactly the same letters as the word directly below – they are anagrams of each other (e.g. 'listen' and 'silent' both contain the same letters).

5 six

Solution: The words in the top row of the grid are all 3D shapes. The words in the bottom row give the number of faces of these 3D shapes.

6 under

Solution: The words in the top row of the grid can be used with the words in the bottom row to make common idioms ('snowed under', 'sit tight' and 'perfect storm').

7 euro

Solution: The words in the top row of the grid are all countries. The word directly below each one is the name of the currency used there (e.g. the currency in 'Spain' is the 'euro').

8 glass

Solution: The words in the top row of the grid have similar meanings. They can each be used with the word directly below to are new ideas and form compound nouns (e.g. 'looking' + 'glass' = 'looking glass').

9 roared

Solution: Each word in the top row of the grid can be used with the verb directly below to form a common example of personification (e.g. 'thunder roared').

10 challenging

Solution: 'Strong', 'difficult' and 'callous' are all synonyms of 'hard', but each word can be used in a slightly different context. The words in the bottom row are synonyms of 'solid', 'difficult' and 'callous' when used to mean 'hard' (e.g. 'difficult' = 'challenging')

Rhyming Synonyms

Test 3

1. **C** **summit**
   tweak → peak → summit
2. **D** **terminate**
   retort → abort → terminate
3. **C** **nonconformist**
   treble → rebel → nonconformist
4. **B** **leaps**
   distorts → cavorts → leaps
5. **E** **strict**
   revere → severe → strict
6. **B** **led**
   proceeded → preceded → led
7. **A** **dissolved**
   rebranded → disbanded → dissolved
8. **B** **accompanied**
   distorted → escorted → accompanied
9. **B** **reveal**
   enclose → disclose → reveal
10. **B** **ostentatious**
    deliberate → elaborate → ostentatious

Homework - Synonyms and Antonyms

PAGE 11 — MULTIPLE MEANINGS

1. **fine** — *'fine' can mean 'fair and sunny' or 'good'.*
2. **roll** — *'roll' can mean 'to move by turning over' or 'a piece of baked dough'.*
3. **rose** — *'rose' can mean 'a pink colour' or 'went up into the air'.*
4. **lead** — *'lead' can mean 'to show the way' or 'the first or foremost position'.*
5. **hard** — *'hard' can mean 'rigid' or 'requiring great effort or endurance'.*
6. **mistake** — *'mistake' can mean 'an error' or 'to misunderstand'.*
7. **close** — *'close' can mean 'a short distance away' or 'to shut'.*
8. **object** — *'object' can mean 'a material thing' or 'a goal or purpose'.*
9. **prize** — *'prize' can mean 'a reward for victory' or 'to value highly'.*
10. **wind** — *'wind' can mean 'a gust of air' or 'to twist something in a spiral'.*
11. **lie** — *'lie' can mean 'to take a horizontal position' or 'a false statement'.*
12. **bow** — *'bow' can mean 'to stoop' or 'a decorative knot in ribbon or string'.*
13. **plain** — *'plain' can mean 'an expanse of land' or 'clear'.*
14. **mine** — *'mine' can mean 'a pit for extracting minerals' or 'an explosive device'.*
15. **dear** — *'dear' can mean 'expensive' or 'something that is much loved'.*
16. **reserve** — *'reserve' can mean 'quietness' or 'to book in advance'.*
17. **function** — *'function' can mean 'what an item is used for' or 'a social gathering'.*
18. **ground** — *'ground' can mean 'the basis of a belief' or 'the earth's surface'.*

PAGE 12 — CLOSEST MEANING

1. **immense** — *Both words mean 'large'.*
2. **truthful** — *Both words mean 'inclined to tell the truth'.*
3. **squander** — *Both words mean 'to use unnecessarily'.*
4. **gobble** — *Both words mean 'to eat hungrily'.*
5. **conquer** — *Both words mean 'to beat'.*
6. **miserly** — *Both words mean 'unwilling to spend money'.*
7. **leave** — *Both words mean 'to go away'.*
8. **preferred** — *Both words mean 'first choice'.*
9. **dismal** — *Both words mean 'dreary'.*
10. **slump** — *Both words mean 'to sag from lack of support'.*
11. **wan** — *Both words mean 'lacking colour'.*
12. **furtive** — *Both words mean 'sly'.*
13. **bizarre** — *Both words mean 'unusual'.*
14. **putrid** — *Both words mean 'decaying'.*
15. **secure** — *Both words mean 'free from risk or danger'.*
16. **noteworthy** — *Both words mean 'worth remembering'.*
17. **juvenile** — *Both words mean 'immature'.*
18. **wily** — *Both words mean 'crafty'.*
19. **develop** — *Both words mean 'to expand'.*
20. **gluttonous** — *Both words describe someone who eats much more than is necessary.*

PAGE 13 — CLOSEST MEANING

1. **scissors** — *Both words are instruments used for cutting.*
2. **eager** — *Both words mean 'enthusiastic'.*
3. **meadow** — *Both words mean 'a pasture'.*
4. **cycle** — *Both words are verbs which mean 'to power a bike'.*
5. **myth** — *Both words mean 'a folk story'.*
6. **scrap** — *Both words mean 'a small piece of something'.*
7. **positive** — *Both words mean 'hopeful'.*
8. **proceed** — *Both words mean 'to move forward'.*
9. **tutor** — *Both words are verbs which mean 'to pass on knowledge'.*
10. **generous** — *Both words are adjectives which mean 'willing to give'.*
11. **drizzle** — *Both words are a type of wet weather.*
12. **scrawl** — *Both words mean 'to write untidily'.*
13. **neutral** — *Both words mean 'not taking a side'.*
14. **gaze** — *Both words mean 'to look at something intently'.*
15. **unite** — *Both words are verbs which mean 'to attach or group together'.*
16. **grief** — *Both words mean 'sorrow'.*
17. **entire** — *Both words are adjectives which mean 'whole'.*
18. **wring** — *Both words mean 'to squeeze and turn'.*
19. **supple** — *Both words mean 'bendy'.*
20. **squawk** — *Both words mean 'to squeal'.*