BROAD HORIZON
TUITION CENTRE

11+ Tuition – Year 5

Week 12 - Online

ANSWER

Starter Task – Revision

		Mode	Range	Mean	Median
1)	7, 5, 6, 6	6	2	6	6
2)	13, 9, 5, 9	9	8	9	9

3. $978 \times 65 =$

63570

4. $25 \times 13 =$

325

5. What is the LCM of 6 and 4 ?

12

6. What is the Highest Common Factor of 36 and 42

6

7. $2.55 \times 1000 =$

2550

8. $3 \div 1000 =$

0.003

9. Round 10,654 to the nearest 100

10,700

10. $(3^2 + 14 \div 2) - (10 - 2^3)$

14

11. $24 + 67 - (4 - 2^3)$

95

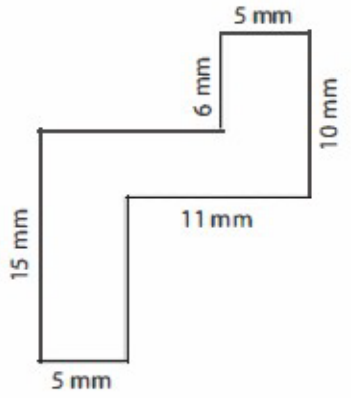
12. What is the difference between 2:45am and 6:22am

3 hours 37 minutes

Maths Revision

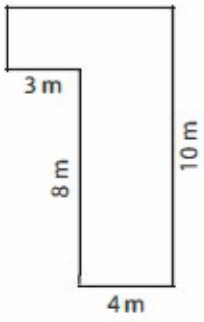
Perimeter

1)



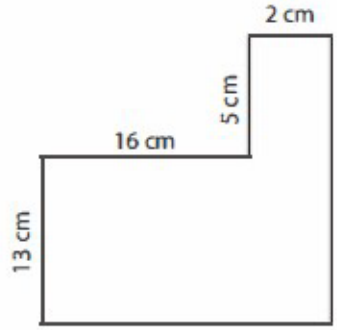
Perimeter = **74 mm**

2)



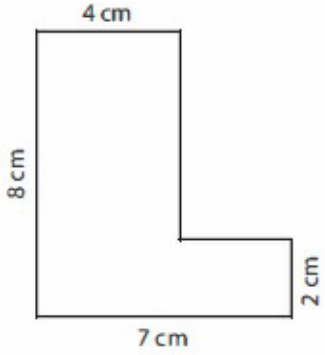
Perimeter = **34 m**

3)



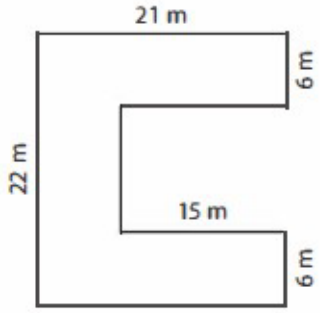
Perimeter = **72 cm**

4)



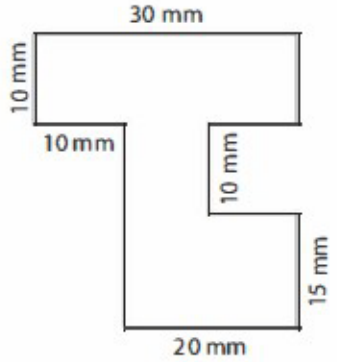
Perimeter = **30 cm**

5)



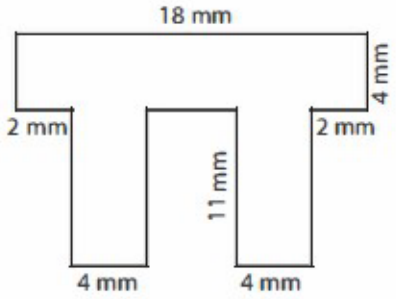
Perimeter = **116 m**

6)



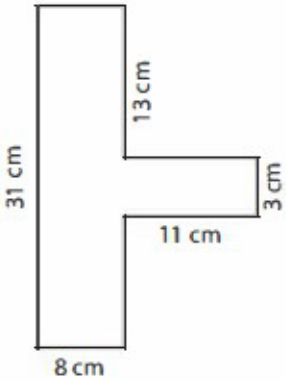
Perimeter = **150 mm**

7)



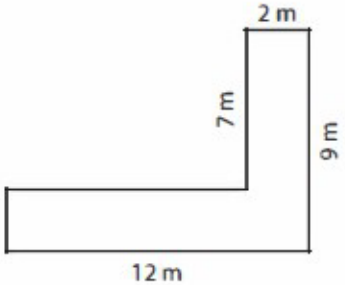
Perimeter = **88 mm**

8)



Perimeter = **100 cm**

9)



Perimeter = **42 m**

Area of a rectangle

1) length = 10 cm, width = 8 cm

Area = 80 cm²

2) width = 4 m, length = 7 m

Area = 28 m²

3) width = 9 mm, length = 12 mm

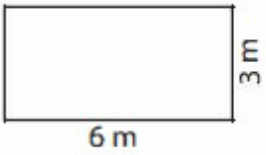
Area = 108 mm²

4) length = 16 cm, width = 11 cm

Area = 176 cm²

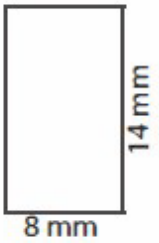
) Find the area of each rectangle.

5)



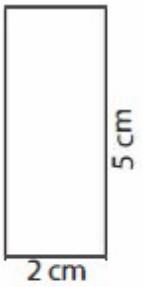
Area = 18 m²

6)



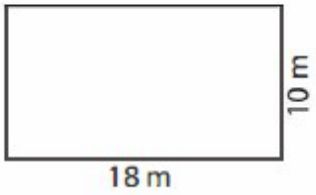
Area = 112 mm²

7)



Area = 10 cm²

8)



Area = 180 m²

9) The length and width of a rectangle are 4 mm and 3 mm respectively. Determine the area of the rectangle.

12 mm²

Volume

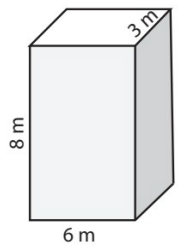
Name : _____ Score : _____

Answer Key

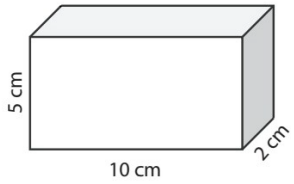
ES1

Volume - Rectangular Prism

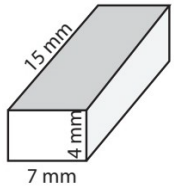
Find the volume of each rectangular prism.

1) 

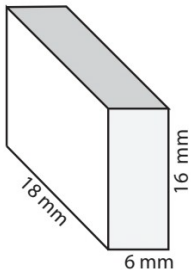
Volume = **144 m³**

2) 

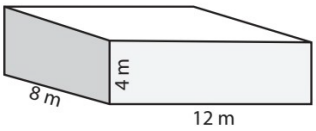
Volume = **100 cm³**

3) 

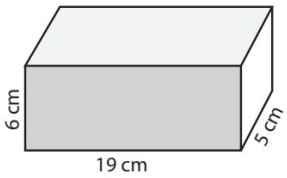
Volume = **420 mm³**

4) 

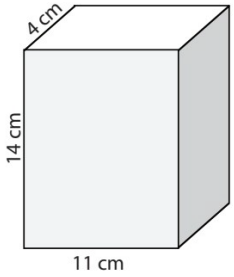
Volume = **1728 mm³**

5) 

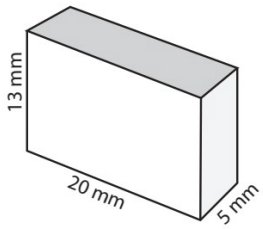
Volume = **384 m³**

6) 

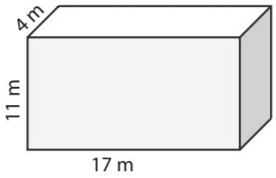
Volume = **570 cm³**

7) 

Volume = **616 cm³**

8) 

Volume = **1300 mm³**

9) 

Volume = **748 m³**

10) A bath tub in the shape of a rectangular prism is 20 meter long, 10 meter wide and 5 meter deep. How much water can it hold?

Volume = **1000 m³**

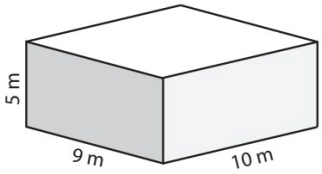
Surface Area

Name : _____ **Answer key** Score : _____

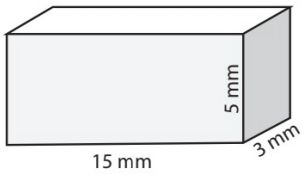
ES2

Surface Area - Rectangular Prism

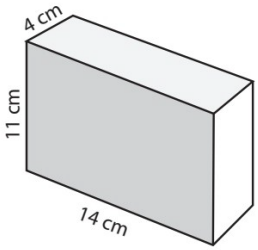
Find the surface area of each rectangular prism.

1) 

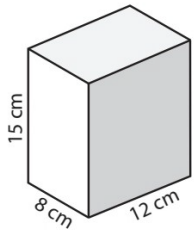
Surface Area = **370 m²**

2) 

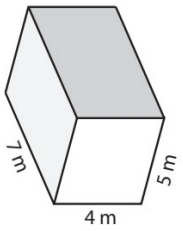
Surface Area = **270 mm²**

3) 

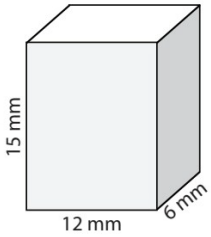
Surface Area = **508 cm²**

4) 

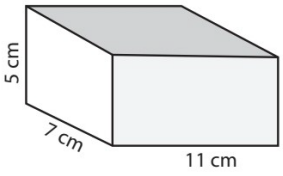
Surface Area = **792 cm²**

5) 

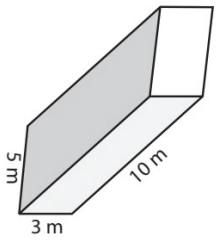
Surface Area = **166 m²**

6) 

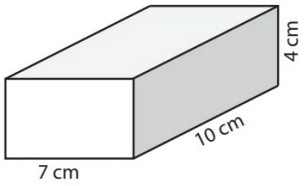
Surface Area = **684 mm²**

7) 

Surface Area = **334 cm²**

8) 

Surface Area = **190 m²**

9) 

Surface Area = **276 cm²**

10) A box in the shape of rectangular prism has a dimension of 30 meters x 27 meters x 28 meters. What is the surface area of the box?

Surface Area = **4812 m²**

Multi-Step Word Problems
Fractions of Amounts **Answers**

1. Sarah entered a 500-word story competition. She wrote her story over two evenings. On the first evening, she wrote $\frac{6}{10}$ and on the second evening she wrote the rest.
   a. How many words did she write on the first evening? **300 words**
   b. How many words did she write on the second evening and what fraction was this? **200 words = $\frac{4}{10}$ or $\frac{2}{5}$**

2. Two families, the Smiths and the Taylors, go to a restaurant for a meal. At the end of the night, when they pay their £150 bill, they decide to split the bill equally between the two families. Mr Smith pays for his family's half of the bill. The Taylor family, however, decide to split their half of the bill between each of their family members, each member paying $\frac{1}{3}$ of their family's bill.
   a. How much do the Smiths pay? **£75**
   b. How much do each member of the Taylor family pay? **£25 each**

3. There were 150 school children going on a school residential trip. There were 3 coaches, each carrying $\frac{1}{3}$ of the children. On coach B, $\frac{1}{10}$ of the children had medication with them.
   a. How many children were on each coach? **50 children on each coach**
   b. How many children had medication on coach B? **5 children**

4. A retired couple won £800 on the lottery. They decided to give $\frac{5}{8}$ to their family and to spend $\frac{3}{8}$ on a weekend away for themselves.
   a. How much money did the couple give to their family? **£500**
   b. How much money did they spend on their weekend away? **£300**

5. Jane watched a film that was 120 minutes long. $\frac{5}{6}$ of the way through the film, the doorbell rang. She paused the film to answer the door and it was the postman with a parcel.
   a. How many minutes of the film had she watched before the postman arrived? **100 minutes** or **1 hour and 40 minutes**
   b. How many minutes of the film did she have left to watch? **20 minutes = $\frac{1}{6}$ or $\frac{20}{120}$ or $\frac{2}{12}$**

6. A cake maker is baking a wedding cake that needs three different sized tiers. The mixture weighs 4000g. He uses $\frac{1}{2}$ of the mixture for the bottom tier, $\frac{3}{8}$ of the mixture for the middle tier and $\frac{1}{8}$ of the mixture for the top tier.
   a. What is the weight of the mixture in the bottom tier? **2000g** or **2kg**
   b. What is the weight of the mixture in the middle tier? **1500g** or **1.5kg**
   c. What is the weight of the mixture in the top tier? **500g** or **0.5kg**

7. A dressmaker has 12m of fabric to make an outfit. He makes a bag with $\frac{1}{12}$ of the fabric, a skirt with $\frac{1}{2}$ of the fabric and a top with the rest.
   a. How much fabric is used for the bag? **1m**
   b. How much fabric is used for the skirt? **6m**
   c. How much fabric is used for the top and what is this as a fraction of the total fabric? **5m = $\frac{5}{12}$**

8. A chef ordered thirty-six eggs for her restaurant. $\frac{1}{12}$ of the eggs were used for a chocolate brownie special and $\frac{1}{4}$ of the eggs were used for cooked breakfasts. From the remainder, $\frac{1}{2}$ of the eggs were used for the meringue in an Eton Mess pudding.
   a. How many eggs were used for the chocolate brownie? **3**
   b. How many eggs were used for the breakfasts? **9**
   c. How many eggs were used for the Eton Mess? **12**
   d. How many eggs were left? **12**

9. At the Olympics, a country won 60 medals. $\frac{1}{2}$ of the medals were gold, $\frac{1}{3}$ of the medals were silver and $\frac{1}{6}$ of the medals were bronze.
   a. How many medals were gold? **30**
   b. How many medals were silver? **20**
   c. How many medals were bronze? **10**

10. At the local triathlon, competitors travel a total distance of 20km. They cycle $\frac{4}{5}$ of the distance, run $\frac{3}{20}$ of the distance and swim $\frac{1}{20}$ of the distance.
    a. How far do the competitors cycle? **16km**
    b. How far do the competitors run? **3km**
    c. How far do the competitors swim? **1km**

Adding and Subtracting Fractions

Name : _____ Score : _____

Teacher : _____ Date : _____

Adding Fractions

1) $\frac{1}{3} + \frac{3}{4} = \frac{4}{12} + \frac{9}{12} = \frac{13}{12} = 1\frac{1}{12}$

2) $\frac{1}{6} + \frac{1}{3} = \frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$

3) $\frac{4}{6} + \frac{16}{18} = \frac{12}{18} + \frac{16}{18} = \frac{28}{18} = \frac{14}{9} = 1\frac{5}{9}$

4) $\frac{1}{4} + \frac{9}{52} = \frac{13}{52} + \frac{9}{52} = \frac{22}{52} = \frac{11}{26}$

5) $\frac{6}{50} + \frac{4}{5} = \frac{6}{50} + \frac{40}{50} = \frac{46}{50} = \frac{23}{25}$

6) $\frac{12}{22} + \frac{6}{11} = \frac{12}{22} + \frac{12}{22} = \frac{24}{22} = \frac{12}{11} = 1\frac{1}{11}$

7) $\frac{15}{23} + \frac{11}{46} = \frac{30}{46} + \frac{11}{46} = \frac{41}{46}$

8) $\frac{9}{16} + \frac{2}{4} = \frac{9}{16} + \frac{8}{16} = \frac{17}{16} = 1\frac{1}{16}$

9) $\frac{14}{23} + \frac{13}{46} = \frac{28}{46} + \frac{13}{46} = \frac{41}{46}$

10) $\frac{1}{9} + \frac{1}{3} = \frac{1}{9} + \frac{3}{9} = \frac{4}{9}$

Name : _____ Score : _____

Teacher : _____ Date : _____

Subtracting Fractions

1) $\frac{3}{10} - \frac{1}{4} = \frac{6}{20} - \frac{5}{20} = \frac{1}{20}$

2) $\frac{4}{5} - \frac{5}{10} = \frac{8}{10} - \frac{5}{10} = \frac{3}{10}$

3) $\frac{6}{8} - \frac{1}{3} = \frac{18}{24} - \frac{8}{24} = \frac{10}{24} = \frac{5}{12}$

4) $\frac{3}{10} - \frac{1}{5} = \frac{3}{10} - \frac{2}{10} = \frac{1}{10}$

5) $\frac{2}{4} - \frac{2}{7} = \frac{14}{28} - \frac{8}{28} = \frac{6}{28} = \frac{3}{14}$

6) $\frac{12}{27} - \frac{4}{9} = \frac{12}{27} - \frac{12}{27} = 0$

7) $\frac{1}{4} - \frac{4}{24} = \frac{6}{24} - \frac{4}{24} = \frac{2}{24} = \frac{1}{12}$

8) $\frac{3}{4} - \frac{6}{8} = \frac{6}{8} - \frac{6}{8} = 0$

9) $\frac{4}{9} - \frac{2}{27} = \frac{12}{27} - \frac{2}{27} = \frac{10}{27}$

10) $\frac{5}{7} - \frac{9}{14} = \frac{10}{14} - \frac{9}{14} = \frac{1}{14}$

Converting Fractions to Decimals

Convert the following fractions to their equivalent decimals. The first one has been done for you.

1. $\frac{160}{100} = 1.6$
2. $\frac{60}{100} = 0.6$
3. $\frac{43}{100} = 0.43$
4. $\frac{73}{100} = 0.73$
5. $\frac{129}{100} = 1.29$
6. $\frac{7}{100} = 0.07$
7. $\frac{99}{100} = 0.99$
8. $\frac{2}{10} = 0.2$
9. $\frac{5}{50} = 0.1$
10. $\frac{70}{100} = 0.7$
11. $\frac{124}{100} = 1.24$
12. $\frac{48}{100} = 0.48$
13. $\frac{9}{100} = 0.09$
14. $\frac{165}{100} = 1.65$
15. $\frac{22}{50} = 0.44$
16. $\frac{69}{100} = 0.69$
17. $\frac{176}{100} = 1.76$
18. $\frac{23}{100} = 0.46$
19. $\frac{5}{10} = 0.5$
20. $\frac{65}{100} = 0.65$
21. $\frac{139}{100} = 1.39$
22. $\frac{117}{100} = 1.17$
23. $\frac{190}{100} = 1.9$
24. $\frac{27}{100} = 0.27$
25. $\frac{4}{10} = 0.4$

Challenge

26. $\frac{14}{20} = 0.7$
27. $\frac{23}{25} = 0.92$
28. $\frac{78}{50} = 1.56$
29. $\frac{34}{25} = 1.36$
30. $\frac{89}{50} = 1.78$

Percentages

1) A shop sells chocolate, vanilla and strawberry ice creams. 45% of the ice creams sold are vanilla, and 17% are strawberry. What percentage are chocolate?

Answer: 38%

2) An animal park has lions, tigers and zebras. 17% of the animals are lions and half the animals are zebras. What percentage are tigers?

Answer: 33%

3) LA Galaxy have won 68% of their soccer matches. What percentage have they lost?

Impossible question – we don't know how many matches have been drawn

4) Out of the 250 million cars on the road in the US, about 3% are diesel. What percentage are not diesel?

Answer: 97%

5) In a fruit survey, children choose their favourite fruit out of apples, bananas and watermelon. 29% chose apples, 41% chose bananas. What percentage chose watermelon?

Answer: 30%

6) In a traffic survey, some bikes, buses and cars were recorded. 70% of the vehicles were cars and 17% were buses. What percentage were bikes?

Answer: 13%

7) There is a 22% chance it will rain tomorrow. What is the chance it will stay dry?

Answer: 78%

8) Sally either walks, cycles or drives to work. She walks about 15% of the time and drives about 50% of the time. What percentage of the time does she cycle?

Answer: about 35%

1) A bike costs $200 but is reduced by 30% in a sale.
How much is the bike reduced by?
Answer: $60
What does it cost in the sale?
Answer: $140

2) A bag contains some red, blue and yellow balls. 30% of the balls are blue and 40% are red.
If there are 50 balls in the bag, how many are yellow?

Answer: 15 yellow balls

3) I toss a coin more than 60 times. It comes down tails 40% of the time.
How many heads did I toss?

Impossible question – we do not know the exact number of tosses.

4) A piece of hematite contains 70% iron. If the hematite weighed 60g, how much iron would there be?

Answer: 42g of iron

5) In a basketball game, Sally is the top scorer with 40% of the team's points. If the team scored 30 points, how many has Sally scored?

Answer: 12 points

6) A survey of 250 trees in a small wood showed that 30% were oak trees, 20% were birch trees and the remainder were pine trees.
How many pine trees were there?

Answer: 125 pine trees

7) A toy helicopter costs $60 before sales tax. If the sales tax is 10%, how much would it cost to buy?

Answer: $66

8) In a school survey of 300 pupils, 70% walk to school regularly.
How many children is this?

Answer: 210 children

Percentages of Numbers

1) 30% of 20 = **6**
2) 2% of 800 = **16**
3) 25% of 24 = **6**
4) 7% of 500 = **35**
5) 50% of 38 = **19**
6) 70% of 40 = **28**
7) 6% of 1000 = **60**
8) 75% of 80 = **60**
9) 4% of 300 = **12**
10) 30% of 300 = **90**
11) 9% of 200 = **18**
12) 25% of 40 = **10**
13) 80% of 10 = **8**
14) 3% of 2000 = **60**
15) 50% of 254 = **127**
16) 200% of 135 = **270**
17) 60% of 200 = **120**
18) 7% of 600 = **42**
19) 2% of 900 = **18**
20) 90% of 50 = **45**
21) 150% of 240 = **360**
22) 400% of 15 = **60**
23) 25% of 36 = **9**
24) 15% of 60 = **9**
25) 45% of 80 = **36**
26) 8% of 200 = **16**
27) 35% of 1000 = **350**
28) 75% of 16 = **12**
29) 55% of 40 = **22**
30) 80% of 300 = **240**
31) 45% of 80 = **36**
32) 90% of 150 = **135**
33) 4% of 250 = **10**
34) 15% of 120 = **18**
35) 25% of 48 = **12**
36) 95% of 100 = **95**
37) 50% of 1284 = **642**
38) 10% of 365 = **36.5**
39) 45% of 60 = **27**
40) 8% of 1200 = **96**

A) 50% and 100%

1)	50% of £7	**£3.50**	2)	100% of £1.80	**90p**	3)	50% of £13	**£6.50**
4)	100% of £8.10	**£8.10**	5)	50% of £214	**£107**	6)	100% of £9.70	**£9.70**
7)	50% of £3.20	**£1.60**	8)	100% of £134	**£134**	9)	50% of £6.80	**£3.40**
10)	100% of £49	**£49**	11)	50% of £9.80	**£4.90**	12)	50% of £12.40	**£6.20**

B) 1% and 10%

1)	10% of £67	**£6.70**	2)	1% of £72	**72p**	3)	1% of £430	**£4.30**
4)	10% of £3.20	**32p**	5)	1% of £3	**3p**	6)	10% of £8.30	**83p**
7)	1% of £52	**52p**	8)	10% of £32.70	**£3.27**	9)	10% of £56.40	**£5.64**
10)	1% of £726	**£7.26**	11)	1% of £31	**31p**	12)	10% of £73	**£7.30**

C) 1%, 10%, 50% and 100%

1)	10% of £75	**£7.50**	2)	50% of £1.80	**90p**	3)	100% of £6.30	**£6.30**
4)	1% of £63	**63p**	5)	10% of £42.60	**£4.26**	6)	1% of £738	**£7.38**
7)	50% of £324	**£162**	8)	100% of £8.90	**£8.90**	9)	10% of £625	**£6.25**
10)	1% of £580	**£5.80**	11)	50% of £8.20	**£4.10**	12)	10% of £7.60	**76p**
13)	100% of £34	**£34**	14)	1% of £9	**9p**	15)	10% of £538	**£5.38**
16)	1% of £37	**37p**	17)	50% of £15	**£7.50**	18)	10% of £2.80	**28p**

TEST PAPER 3:

1. toe finger
2. driver pilot
3. ink paint
4. sea land

86. cabin
87. carpet

42. sand
43. soap
44. meat

37. CAME
38. BELL
39. TALL

25. bitter sweet
26. quiet noisy
27. raise lower
28. repair injure

54. lip
55. rot
56. rot
57. ten

71. BAY EYE GET
72. PAT AGE WON

6. wheat corn
7. haddock trout
8. wrist ankle
9. lord boy
10. snowdrop lupin

23. D
24. A
25. D
26. E
27. B
28. E
29. A
30. C
31. B T11/1

88. mouse
89. cotton
90. rubber
91. book
92. pip
93. stem

39. Wednesday
40. £3.30
41. 170

97. roller
98. pellet

82. K
83. U
84. E

70. VW
71. MG

TYPE SEVENTEEN:

2	4	1	5	3
2	5	4	3	1
5	3	2	1	4
2	5	3	4	1
3	1	4	5	2
5	4	3	2	1
1	2	3	4	5
5	3	2	1	4
1	3	5	2	4
2	1	3	5	4
1	4	2	3	5
1	2	4	3	5
3	2	1	4	5

truant
sample
dictate
thoughtless
augment

Non-Verbal Reasoning

Test 3

ASSESSMENT TEST 3

Section 1 — Complete the Series

1. A

In each series square, a quarter-circle is added. The first quarter is the bottom-left quarter and the others are added anticlockwise. The first quarter is white and the others are added in an alternating grey / white pattern.

2. C

In each series square, the black triangle rotates 90 degrees clockwise around the white square.

3. C

In each series square, the white circle gains an extra black dot. The arrow alternates between pointing right and pointing left.

4. B

The squares in this series are in two pairs. In each pair, the bottom shape rotates 90 degrees clockwise and changes shading from white to grey.

5. D

In each series square, an extra line crosses the triangle. The triangle alternates between pointing to the top-left and top-right corners.

6. B

In each series square, the figure rotates 45 degrees and gets bigger.

7. C
In each series square, an extra shape is added. The colours of the shapes alternate between black and white.

8. B
Each series square is reflected across and gains an extra black star.

9. A
Each series square rotates 90 degrees clockwise. The rectangles alternate between having a solid and dashed outline.

10. C
In each series square, the square rotates 90 degrees anticlockwise. The small black square alternates position between the bottom and top of the vertical line.

Section 2 — Find the Figure Like the First Three

1. C
All figures must have five sides.

2. C
All figures must have two triangles.

3. C
All figures must contain two crosses and one circle.

4. D
All figures must contain three versions of the same shape between two lines. One must be black and the other two must be white.

5. C
All figures must have two overlapping shapes with the same number of sides.

6. C
All figures must be identical apart from rotation. (D is a reflection.)

7. E
In each figure, the number of short lines equals the number of sides of the shape.

8. B
All figures must have two arrows going in a clockwise direction.

Section 3 — Rotate the Figure

1. C
The figure is rotated 180 degrees. Options A, B and D are the wrong shape.

2. B
The figure is rotated 90 degrees clockwise. In option A, the small triangle has become black and the thick black stripe has become white. In options C and D, the triangle is positioned incorrectly and in option C, the stripe is also positioned incorrectly.

3. D
The figure is rotated 135 degrees clockwise. Option A is a reflection. In option B, the triangle and arrow have swapped shadings. In option C, the arrow is positioned incorrectly.

4. A
The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). Option B has the wrong arrowheads. In options C and D, the arrows are positioned incorrectly.

5. B
The figure is rotated 90 degrees clockwise. Options A and D are the wrong shape. Option C is a rotated reflection.

6. B
The figure is rotated 135 degrees clockwise. Options A and C have the wrong shading. Option D is a rotated reflection.

7. D
The figure is rotated 270 degrees clockwise (or 90 degrees anticlockwise). Option A has the wrong arrowhead. Option B is a rotated reflection. Option C is the wrong shape.

8. A
The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). In option B, the parallelogram has the wrong shading. Option C is a rotated reflection. In option D, the parallelogram is positioned incorrectly.

9. C
The figure is rotated 90 degrees clockwise. Option A is a downwards reflection. In option B, there are too many lines inside the triangles. In option D, the lines in the triangles are positioned incorrectly.

10. C
The figure is rotated 135 degrees clockwise. In option A, the star only has four points. Option B is a reflected rotation. Option D has the wrong number of black lines.

Section 4 — 2D Views of 3D Shapes

1. B
There should be four blocks visible from above, which rules out options A and D. There are two blocks at the front of the shape, which rules out option C.

2. D
There should be four blocks visible from above, which rules out options A and B. There is only one block at the front of the shape, which rules out option C.

3. C
There should be four blocks visible from above, which rules out options A and D. There are three blocks at the front of the shape, which rules out option B.

4. A
There should be five blocks visible from above, which rules out options B and C. There are two blocks at the back of the shape, which rules out option D.

5. B
There should be five blocks visible from above, which rules out options A and C. There are two blocks on the right of the shape, which rules out option D.

6. B
There should be six blocks visible from above, which rules out options A and D. There are three blocks at the back of the shape, which rules out option C.

7. B

There should be six blocks visible from above, which rules out options C and D. There are two blocks on the right of the shape, which rules out option A.

8. C

There should be seven blocks visible from above, which rules out options A and B. There are three blocks at the front of the shape, which rules out option D.

Section 5 — Odd One Out

1. D

All other figures have a white shape on the end of the arrow-style line.

2. D

In all other figures, the line of symmetry is dashed.

3. E

In all other figures, the white shape has four sides.

4. E

In all other figures, there are three thick lines.

5. B

All other figures have two white shapes.

6. D

In all other figures, the shape at the end of the arrow-style line is the same as the large shape.

7. B

In all other figures, the two circles are on adjacent corners of the large shape.

8. C

In all other figures, the arrow is pointing at the small grey circle.