BROAD HORIZON
TUITION CENTRE

11+ Tuition – Year 5

Week 16 - Online

Answers

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Maths Revision Lesson

Pie Charts and Data

A popular movie magazine took a poll among its readers on their favorite type of movie. The results were published in the form of a pie graph. Answer the questions based on the pie graph.

1. What fraction of people like movies on fantasy? $\frac{1}{5}$
2. Which movie genres got the same number of votes? Action, Adventure
3. What percentage of readers like science fictions? 30 %
4. What fraction of readers voted for comedy as their favorite? $\frac{1}{4}$
5. How many would watch any other movie rather than 2375

Misleading Data

1. Anne

Despite only having 12 votes, Anne received a higher percentage than Jamie, Hasim, Ted and Lex. Jamie got 25%, Hasim got 10% and Ted got 5%. Lex didn't get any votes, so he got 0%.
So that leaves Anne with 100% – 40% (25 + 10 + 5) = 60%
(There were only twenty voters).

2. C

The pictures in this pictogram are different sizes and this is misleading. For example the crocodile row appears longer than the snake row, but there are only 12 crocodiles (3 x 4 = 12) compared to 22 snakes (5.5 x 4 = 22).

3. D

The steps on the vertical axis double each time. What the graph appears to show at a glance is different to what the data actually shows. For example, the number of calls on Wednesday is actually double the number on Tuesday, but the difference between the values plotted on the graph looks smaller than this.

4. D

The number of children with blue eyes is $\frac{3}{4}$ of the number with green eyes. There are 24 children with blue eyes and 32 with green eyes. $\frac{1}{4}$ of 32 is 8 (32 ÷ 4 = 8) so $\frac{3}{4}$ of 32 = 3 x 8 = 24.
(The blue bar is not $\frac{3}{4}$ of the height of the green bar because the scale does not start at zero.)

Mean

1. 6

4 + 3 + 7 + 8 + 8 = 30. There are 5 numbers in total. So the mean is 30 ÷ 5 = 6.

2. 9

8 + 12 + 8 + 7 + 10 = 45. There are 5 numbers in total. So the mean is 45 ÷ 5 = 9.

3. 8

5 + 9 + 7 + 6 + 4 + 17 = 48. There are 6 numbers in total. So the mean is 48 ÷ 6 = 8.

4. 10

9 + 8 + 10 + 12 + 9 + 12 = 60. There are 6 numbers in total. So the mean is 60 ÷ 6 = 10.

5. 8

10 + 8 + 11 + 11 + 2 + 4 + 12 + 6 = 64.
There are 8 numbers in total.
So the mean is 64 ÷ 8 = 8.

6. 14 s

When the five sprint times are added together you get: 14 + 12 + 15 + 17 + 12 = 70. There are 5 times in total. So the mean time is 70 ÷ 5 = 14.

7. 11

2 + 3 + 9 + 10 + 12 + 3 + 5 + 7 + 19 + 20 + 31 = 121. There are 11 scores in total.
So the mean score is 121 ÷ 11 = 11.

8. 12 mm

9 + 12 + 14 + 13 = 48. There are 4 numbers in total. So the mean is 48 ÷ 4 = 12.

9. 21

30 + 6 + 9 + 10 + 11 + 60 = 126.
There are 6 scores in total.
So the mean score is 126 ÷ 6 = 21.

10. E

The mean of E is (16 + 4 + 9 + 7 + 14) ÷ 5 = 50 ÷ 5 = 10. So E is the correct answer.

Mean, Mode, Median and Range

Mean, Mode, Me

1) 3, 8, 2, 3
2, 3, 3, 8

Mean 4 Median 3 Mode 3 Range 6

2) 7, 9, 7, 9
7, 7, 9, 9

Mean 8 Median 8 Mode 7, 9 Range 2

3) 6, 7, 3, 3, 6, 5
3, 3, 5, 6, 6, 7

Mean 5 Median 5.5 Mode 3, 6 Range 4

4) 8, 5, 3, 8
3, 5, 8, 8

Mean 6 Median 6.5 Mode 8 Range 5

5) 5, 6, 8, 5, 6, 6
5, 5, 6, 6, 6, 8

Mean 6 Median 6 Mode 6 Range 3

Adding and Subtracting Fractions

Adding Fractions

1) $\frac{6}{10} + \frac{2}{4} = \frac{12}{20} + \frac{10}{20} = \frac{22}{20} = \frac{11}{10} = 1\frac{1}{10}$

2) $\frac{5}{10} + \frac{1}{4} = \frac{10}{20} + \frac{5}{20} = \frac{15}{20} = \frac{3}{4}$

3) $\frac{1}{3} + \frac{2}{5} = \frac{5}{15} + \frac{6}{15} = \frac{11}{15}$

4) $\frac{1}{2} + \frac{2}{3} = \frac{3}{6} + \frac{4}{6} = \frac{7}{6} = 1\frac{1}{6}$

5) $\frac{1}{4} + \frac{3}{5} = \frac{5}{20} + \frac{12}{20} = \frac{17}{20}$

Subtracting Fractions

1) $\frac{2}{3} - \frac{2}{10} = \frac{20}{30} - \frac{6}{30} = \frac{14}{30} = \frac{7}{15}$

2) $\frac{9}{10} - \frac{2}{3} = \frac{27}{30} - \frac{20}{30} = \frac{7}{30}$

3) $\frac{4}{5} - \frac{2}{3} = \frac{12}{15} - \frac{10}{15} = \frac{2}{15}$

4) $\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6} = \frac{1}{6}$

5) $\frac{3}{4} - \frac{6}{10} = \frac{15}{20} - \frac{12}{20} = \frac{3}{20}$

Fractions of Numbers

1) Find $\frac{2}{6}$ of 108 =
36

2) Find $\frac{1}{4}$ of 32 =
8

3) Find $\frac{1}{12}$ of 48 =
4

4) Find $\frac{2}{5}$ of 50 =
20

5) Find $\frac{5}{8}$ of 440 =
275

6) Find $\frac{2}{5}$ of 90 =
36

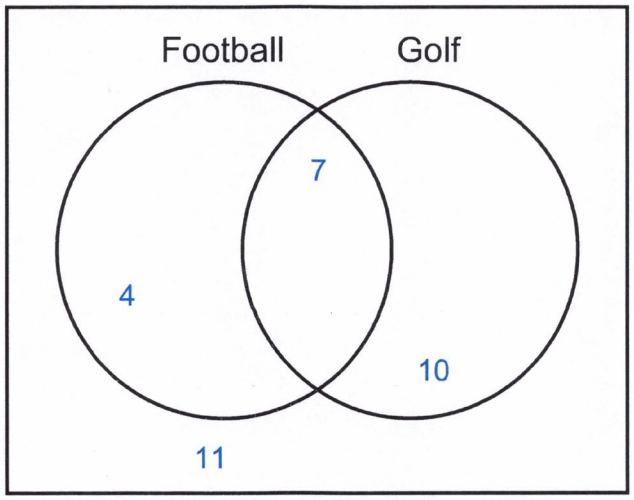
7) Find $\frac{4}{10}$ of 280 =
112

8) Find $\frac{5}{10}$ of 150 =
75

9) Find $\frac{3}{4}$ of 24 =
18

10) Find $\frac{1}{3}$ of 9 =
3

Venn Diagrams



1) How many students like Football or Golf ? 21

2) How many students do not like either Football or Golf ? 11

3) How many students do not like both Football and Golf ? 25

4) How many students like Football ? 11

5) How many students like Golf ? 17

6) How many students only like Golf ? 10

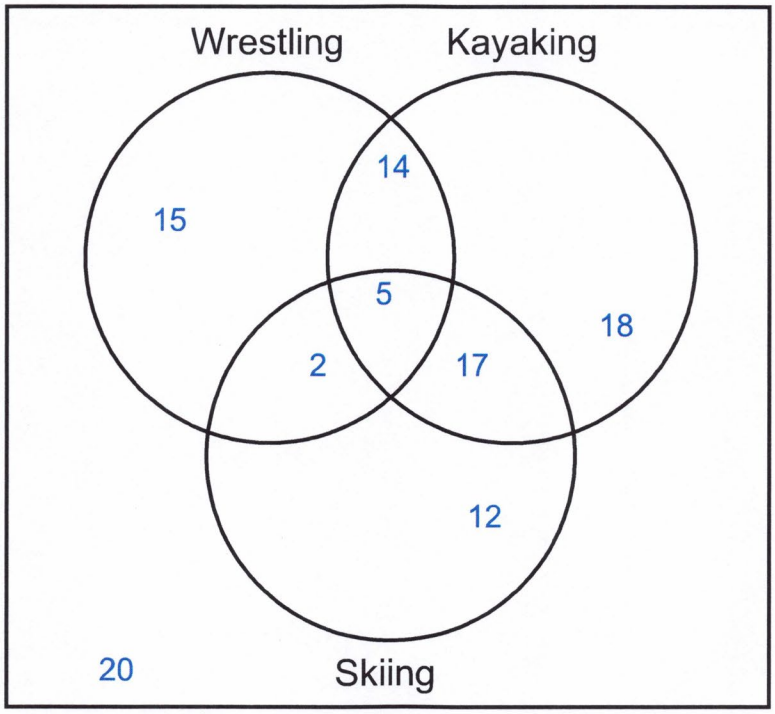
7) How many students do not like Golf ? 15

8) How many students only like Football ? 4

9) How many students do not like Football ? 21

10) How many students like both Football and Golf ? 7

Answer the questions based on the Venn diagram



1) How many students like both Wrestling, Kayaking, and Skiing ? 5

2) How many students like both Wrestling and Kayaking ? 19

3) How many students do not like both Kayaking and Skiing ? 81

4) How many students like both Wrestling and Skiing but not Kayaking ? 2

5) How many students like Wrestling or Skiing but not Kayaking ? 29

6) How many students like Wrestling or Skiing ? 65

7) How many students like both Kayaking and Skiing ? 22

8) How many students do not like both Wrestling and Kayaking ? 84

9) How many students like Wrestling or Kayaking ? 71

10) How many students only like Skiing ? 12

BIDMAS – Order of Operations

Solve.

1) $(83 - 38) \div 3^2$

Ans = **5**

2) $(36 \div 9)^3 - 87$

Ans = **– 23**

3) $(7^2 + 41) \div 3 - 94$

Ans = **– 64**

4) $(14 \times 5) + 2^5$

Ans = **102**

5) $3^2 + (26 - 9) \times 2$

Ans = **43**

6) $7 + 66 \div (2^4 - 5)$

Ans = **13**

7) $(64 + 24) \div 2^3$

Ans = **11**

8) $(55 - 45)^2 \div 4$

Ans = **25**

9) $14 + 75 - (31 \times 3^2)$

Ans = **– 190**

10) $3^3 + 77 \div (27 - 16)$

Ans = **34**

Q.No	Start Time	End Time	Elapsed Time
1)	4:02 A.M.	7:23 A.M.	3 hours and 21 minutes
2)	9:32 P.M.	11:48 P.M.	2 hours and 16 minutes
3)	1:10 A.M.	9:44 A.M.	8 hours and 34 minutes
4)	5:12 P.M.	7:27 P.M.	2 hours and 15 minutes
5)	3:18 A.M.	10:09 A.M.	6 hours and 51 minutes
6)	11:10 P.M.	11:52 P.M.	42 minutes
7)	2:33 A.M.	8:47 A.M.	6 hours and 14 minutes
8)	4:54 P.M.	6:03 P.M.	1 hour and 9 minutes
9)	7:16 A.M.	9:28 A.M.	2 hours and 12 minutes
10)	5:59 P.M.	11:04 P.M.	5 hours and 5 minutes
11)	1:08 A.M.	3:17 A.M.	2 hours and 9 minutes
12)	10:22 P.M.	Midnight	1 hour and 38 minutes
13)	2:45 A.M.	8:33 A.M.	5 hours and 48 minutes
14)	6:11 P.M.	10:10 P.M.	3 hours and 59 minutes
15)	2:14 A.M.	6:36 A.M.	4 hours and 22 minutes

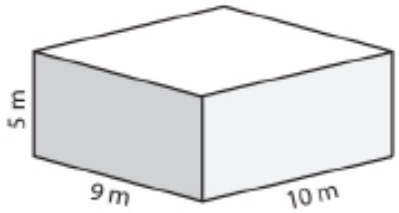
Percentages of Numbers

Question	Answer
1	72
2	0.5
3	5
4	25
5	21
6	45
7	21
8	2.5
9	32
10	45
11	72
12	14
13	27.5
14	93.5
15	22.5

Question	Answer
16	15
17	18
18	123.5
19	19.5
20	9.5

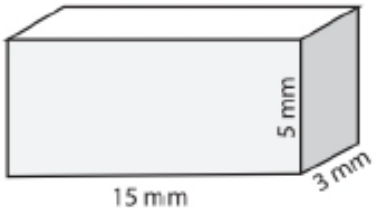
Surface Area

1)



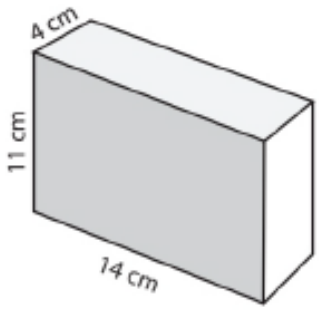
Surface Area = **370 m²**

2)



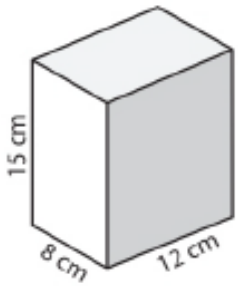
Surface Area = **270 mm²**

3)



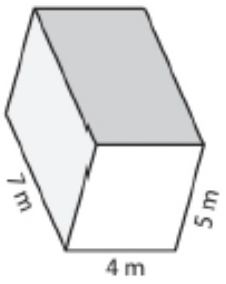
Surface Area = **508 cm²**

4)



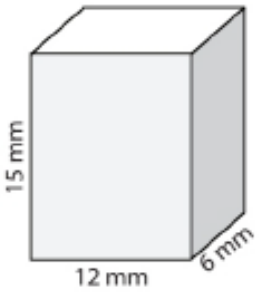
Surface Area = **792 cm²**

5)



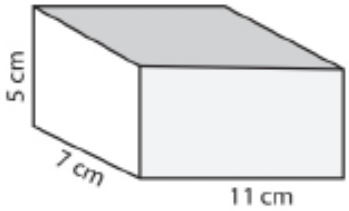
Surface Area = **166 m²**

6)



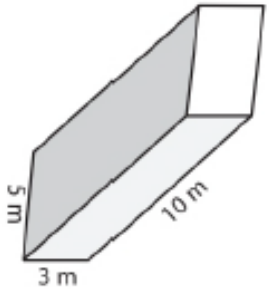
Surface Area = **684 mm²**

7)



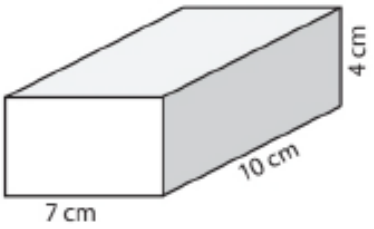
Surface Area = **334 cm²**

8)



Surface Area = **190 m²**

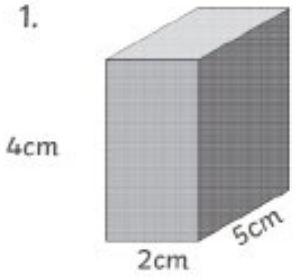
9)



Surface Area = **276 cm²**

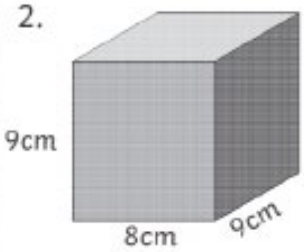
Volume

1.



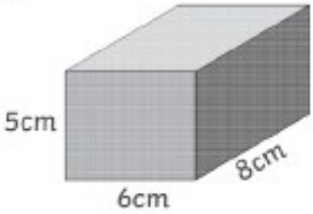
Volume = **40cm³**

2.



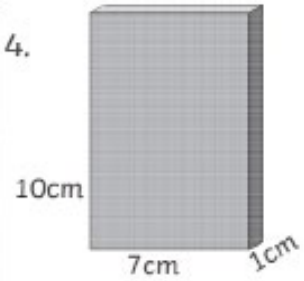
Volume = **648cm³**

3.



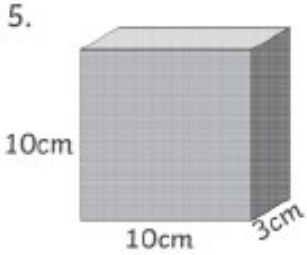
Volume = **240cm³**

4.



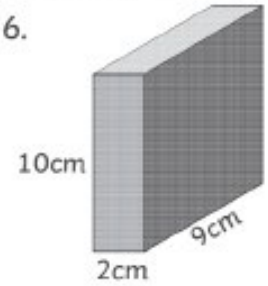
Volume = **70cm³**

5.



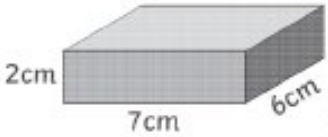
Volume = **300cm³**

6.



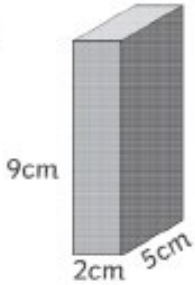
Volume = **180cm³**

7.



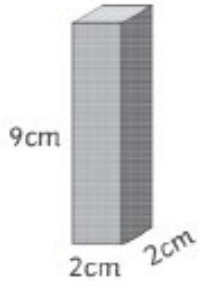
Volume = **84cm³**

8.



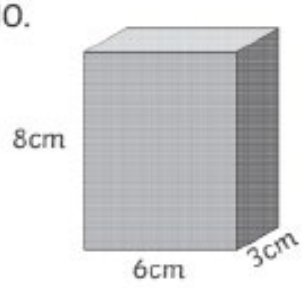
Volume = **90cm³**

9.



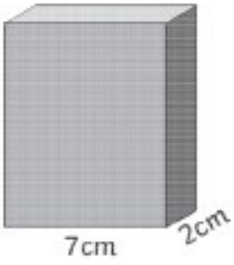
Volume = **36cm³**

10.



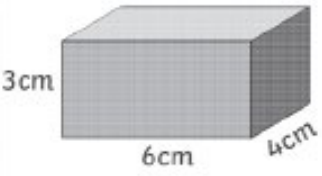
Volume = **144cm³**

11.



Volume = **126cm³**

12.



Volume = **72cm³**

Verbal Reasoning

GL Techniques – Types 1- 22

39. dice
65. LOST
66. BOOT
67. HOSE
8. step
9. time
10. lame
11. hush
12. tar
13. mate

78. tug yacht
79. cycle climb
80. Popeye Pluto

54. 5 1 2 4 3
55. 1 3 4 2 5

74. The bottom drawer
75. rabbit field hurry

31. FRANCE
32. RAKE
33. PENCIL

97. for
98. lay

14. g
15. n
16. y
17. d

48. WAND
49. TEAM

TYPE TWENTY-THREE:

2
Arthur
2
Arthur and Daisy
Daisy

E
1
F
2
E

Non-Verbal Reasoning

Test 5

ASSESSMENT TEST 5

Section 1 — Complete the Square Grid

1. B
Moving from left to right, the hatching of the shape rotates 45 degrees clockwise.

2. D
Moving from left to right, the shape rotates 90 degrees anticlockwise in each grid square.

3. C
The third grid square in each row is made up of the figure in the first grid square on top of the figure in the middle grid square.

4. B
Each shape only appears once in each row and column.

5. A
Working from top to bottom, the circles are in the same position in each grid square. Working from left to right, the arrows are in the same position and orientation in each grid square.

6. B
In each row, the right-hand grid square is formed by combining the shape from the left-hand grid square with the shading from the circle in the central grid square.

7. C
Working from top to bottom, the square in each grid square gains an extra line.

8. A
Working from right to left, one section of the shape is removed in each grid square, going in a clockwise direction. The shape changes colour from white to grey and then back to white.

Section 2 — Find the Figure Like the First Two

1. C
All figures must have a triangle overlapping a circle.

2. B
All figures must have six sides.

3. C
All figures must have a white rectangle in front of a black rectangle.

4. B
All figures must be identical apart from rotation.

5. D
In each figure, the larger shape must have one more side than the smaller shape.

6. D
All figures must have two parallel lines crossing a single longer line.

7. B
All figures must have a dashed line between two shapes of the same colour. (Or they must all have a dashed line and a triangle.)

8. B
All figures must have a grey shape in front of a white shape.

Section 3 — Complete the Pair

1. E
The circles change position, but keep the same shading.

2. B
The figure rotates 90 degrees anticlockwise.

3. E
The shape changes into another shape with the same number of sides.

4. D
The figure rotates 180 degrees.

5. A
The circle and the arrowheads rotate 45 degrees anticlockwise.

6. F
The large shape splits in half and becomes the same colour as the circle.

7. E
The black shape becomes larger and moves to the centre. The white shape gets smaller and moves to the top-left of the black shape.

8. B
The grey shape reflects onto the black shape.

Section 4 — Rotate the Figure

1. D
The figure is rotated 270 degrees clockwise (or 90 degrees anticlockwise). Option A is a reflection. In option B, the shadings of the circle and the square have swapped. Option C has an extra line across the middle.

2. C
The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). Options A and D are the wrong shape. Option B is a reflected rotation.

3. A
The figure is rotated 270 degrees clockwise (or 90 degrees anticlockwise). Options B and D are the wrong shape. Option C is a reflected rotation.

4. C
The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). In option A, the shading of the circles is wrong. Option B is a reflected rotation. Option D has too many circles.

5. B
The figure is rotated 45 degrees clockwise. Options A and C are the wrong shape. Option D is a reflected rotation.

6. D

The figure is rotated 135 degrees clockwise. In option A the pentagon is positioned incorrectly. Option B has a si square instead of a pentagon. Option C is a reflected rot

7. B

The figure is rotated 270 degrees clockwise (or 90 degr anticlockwise). In option A, the shadings of the circles have swapped and there is no small square. Option C is a reflected rotation and both circles are shaded black. In option D, the parallel lines are positioned incorrectly.

8. C

The figure is rotated 225 degrees clockwise (or 135 de anticlockwise). Option A is a reflected rotation. Option B has the wrong number of points on the star. In option D, the star is behind the arch instead of in front of it.

9. C

The figure is rotated 135 degrees clockwise. Option A is a reflected rotation. In option B, the arrow is positioned incorrectly. Option D is a reflection.

10. D

The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). Options A and C are the wrong shape. Option B is a reflected rotation.

Section 5 — Complete the Series

1. D

The series alternates between the first two figures.

2. A

The entire contents of the series square rotates 45 degrees clockwise.

3. D

The number of 'arms' changes in the sequence: three, four, five, four, three. The shading of the circles alternates between grey and white.

4. C

In each series square, the missing side of the inner hexagon moves anticlockwise. The shading of the smallest hexagon alternates between black and white.

5. E

The entire contents of the series square rotates 90 degrees clockwise.

6. E

The sequence of the number of sides of each shape goes: three, four, five, four, three. The hatching alternates between horizontal and vertical.

7. E

Each series square is reflected across and the black shading moves up into the next triangle.

8. B

In each series square, one more arrow rotates so it is pointing diagonally up to the left.

9. D

In each series square, there is one more star. The number of squares alternates between two and one.

10. D

In each series square, the circle gets bigger and the square gets smaller. Each shape alternates between grey and white.