BROAD HORIZON
TUITION CENTRE

11+ Tuition – Year 5

Week 19 - Online

ANSWERS

Contents

Starter Task – Quick Revision

1. Workout $\frac{2}{9}$ of 216

48

2. Workout $\frac{3}{8}$ of 560

210

3. How much more than -56 is 27 ?

83

4. What is the median of 12, 4, 7 and 9

8

5. 36.57 ÷ 1000 =

0.03657

6. Round 14.2576 to the nearest whole number

14.26

7. Share 480 sweets in the ratio of 7:5

280:200

8. Share 200 marbles in the ratio of 3:2:5

60:40:100

9. Increase 300 by 35%

405

10. Decrease 600 by 65%

390

11. What is the probability of rolling a number greater than 4 on a die? **(simplify)**

1/3

12. If N = 2.5 …. What is 4N – 17 ?

-7

13. $4^3 - 8 \times 3 + (19 + 9 - 3^3)$

59

14. What do the total angles in an eight-sided shape add up to ?

1080

15. What is 45% of 280?

126

16. If a triangle has two angles, one is 37 degrees and the other is 83 degrees. What is the 3rd missing angle ?

120

16

Find the share of each part.

1) Divide 45 ¢ in the ratio 6 : 3.

30 ¢ and 15 ¢

2) Divide 156 mi in the ratio 4 : 8.

52 mi and 104 mi

3) Divide 28 ft in the ratio 8 : 6.

16 ft and 12 ft

4) Divide 88 lb in the ratio 7 : 4.

56 lb and 32 lb

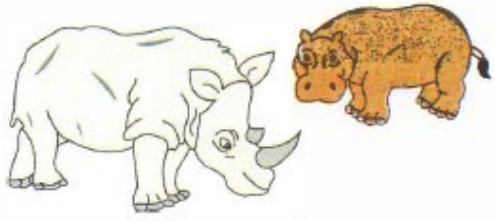
5) Divide 100 yd in the ratio 1 : 9.

10 yd and 90 yd

6) Divide 63 oz in the ratio 5 : 2.

45 oz and 18 oz

7) The total weight of a White rhino calf and a Common hippo calf is 213 pounds. The weight of the White rhino calf to the weight of Common hippo calf is in the ratio 2 : 1. What is the weight of the White rhino calf and the Common hippo calf?



142 lb and 71 lb

1) Aqua regia is a mixture of nitric acid (HNO_3)and hydrochloric acid (HCl) in the ratio 1 : 3. Find the quantity of nitric acid and hydrochloric acid used in 100 fluid ounces of Aqua regia.

25 fl.oz of HNO_3 and 75 fl.oz of HCl

2) A manufacturing company generates a total of 7200 lbs of scrap in the months of May and June in the ratio of 5 : 1. What was the quantity of scrap recovered in May and how many lbs of scrap were recovered in June?

6000 lbs of scrap in May and 1200 lbs of scrap in June

3) Bill recieves his first paycheck of $1200 In July. He spends 6 parts and saves 2 parts. How much does he spend and what amount does he save?

Bill spends $900 and saves $300

4) The ratio of copper and brass in an alloy is present in the ratio of 3 : 5. How much of each metal used to make 128 grams of the alloy?

48 gms of copper and 80 gms of brass used

5) In a bag of mixed nuts, there are 7 walnuts for every 2 peanuts. If the bag contains 90 nuts in all, find the number of walnuts and peanuts it contains?

70 walnuts and 20 peanuts

1) Peter mixes manure and compost in the ratio 3 : 1 to prepare plant fertilizer. If 21 pounds of manure is stirred in, find the quantity of fertilizer prepared altogether.

28 pounds of fertilizer prepared

2) One hundred and ninety two students at Lee's Primary School have enrolled for piano classes. What is the total strength of the school, if the ratio of students who learn piano to guitar is 6 : 7?

Total strength of Lee's school is 416 students

3) A company manufactures hex bolts and machine screws in the ratio 4 : 9. How many fasteners in all can be made, if 963 machine screws are produced in a day?

1391 fasteners in total

4) There are 5 apple trees for every 3 pear trees grown in an orchard. Find the total number of fruit trees in the orchard, if there are 636 pear trees.

Orchard has 1696 fruit trees

5) The ratio of jazz numbers to hip hop tracks are present in the ratio of 7 : 3 in a 4GB mp3 player. How many music tracks in all does the mp3 player hold, if it contains132 hip hop tracks?

It holds 440 music tracks in all

Probability

Answers

Probability Page 10

1) 1/13
2) 1/4
3) 1/13
4) 1/13
5) 40/52 10/13
6) 2/13
7) 1/52
8) 1/13
9) 1/52
10) 1/52

Probability (2)

Dice

4. Two fair dice are rolled.
   What is the probability of rolling:

   (a) double 6 =***1/36*** (b) double 3 =***1/36***

   (b) one dice 5, the other dice 6 =***1/18***

   (c) a total of 10 =***1/12***

   (d) a total of 3 or less =***1/12***

5. Two fair dice are rolled.
   What is the probability:

   (a) *Exactly* one dice is 6 =***5/18***

   (b) *Either* dice is 6 =***11/36***

   (c) *Neither* dice is 6 =***25/36***

6. Two fair dice are rolled.
   What is the probability:

   (a) *Both* dice are odd =***1/4***

   (b) *At least one* dice is odd ***3/4***

   (c) The *total* is odd ***1/2***

Letters

1. A random letter is chosen from ISOSCELES
   What is the probability of choosing:

   (a) C =***1/9*** (b) S or E =***5/9*** (c) H or I =***1/9***

2. A random letter is chosen from SCALENE
   Then a second random letter is chosen from the remaining six letters. What is the probability:

   (a) The *first letter* chosen is an S? =***1/7***

   (b)The *second letter* chosen is an S? =***1/7***

   (c) *Both* first and second letter is an E? =***1/21***

   (d) *Neither* first nor second letter is E? =***10/21***

   (e) *Either* first or second letter is E? =***11/21***

Colours

A bag contains four red balls, two green balls and one white ball (RRRR GG W)

1. One ball is picked and put back in, then a second ball is picked. What is the probability:

   (a) *First ball* red =***4/7*** (b)*Second ball* red =***4/7***

   (c) *Both* first and second ball red =***16/49***

   (d) *Neither* first nor second ball is red =***9/49***

   (e) *Either* first or second ball is red =***40/49***

2. One ball is picked and removed, then a second ball is picked. What is the probability:

   (a) *First ball* red =***4/7*** (b) *Second ball* red=***4/7***

   (c) *Both* first and second ball are red=***2/7***

   (d) *Neither* first nor second ball is red=***1/7***

   (e) *Either* first or the second ball red=***6/7***

3. Compare your answers to Question 1(c) and Question 2(c). What effect does removing the first ball have on the probability of both balls being red? ***Less likely if first ball removed***

Birthdays

1. For this question, assume that everyone is equally likely to be born on any day of the week. Find the probability:

   (a) That someone born on Wednesday =***1/7***

   (b) That someone born on weekend =***2/7***

   (c) That two people both born Friday = ***1/49***

   (d) That two people are both born on the weekend ***4/49***

   (e) That two people born on same day =***1/7***

Percentage Increase and Decrease

Section 4

1. A bag of popcorn costs £1.20. A shop discounts bags of popcorn by 25%.
   What is the new cost?

90p

2. An athlete's best time for running 400m is 50.2 seconds. After a year's training, the athlete cuts their time by 8%. What is their new best time?

46.184 seconds

3. A grocer normally buys 670kg of potatoes each week. One week he decides to buy only 435.5kg. What percentage less potatoes did the grocer buy?

35%

4. A school raises £435 for their chosen charity. In the previous year, the school raised 18% less. How much did the school raise the previous year?

£356.70

5. A shop has to increase the cost of a set of books by 20%.
   The new price is £30. What was the original price?

£25

6. A football team has an average attendance of 35 728 in one season. The following season their average attendance increases by 32%. What is the new average attendance to the nearest whole number?

47 160.96 rounds to 47 161

7. A runner is training for a marathon. In week one, she runs 44 miles over the whole week. In each of the following weeks, she increases the distance she runs by 15%. In which week will she run more than 75 miles?

Week 5

Alegbra KS2 SATS Standard Worksheet Answers

1. 27

[1]

2. 17 1
U1

[1]

3. (a) 98 1

(b) 8 1

[2]

4. Explanation which recognises that 1m
each number is one more than a multiple of 3,eg

- 'It starts at 1 and keeps adding 3 so it misses all the multiples of 3',
- 'Multiples of 3 are all 1 less than the numbers'.

No mark is awarded for circling 'Yes' alone.

***Do not** accept vague or arbitrary explanations such as*

- *'They're too big';*
- *'It doesn't go far enough';*
- *'It is adding 3 all the time'.*

If 'No' is circled but a correct unambiguous explanation is given then award the mark.

[1]

5. Award **TWO** marks for all three numbers, as shown: up to 2

94, 95, 96 U1

Accept numbers written in any order.

*All three numbers and no incorrect numbers must be given for the award of **TWO** marks.*

If the answer is incorrect, award **ONE** mark for:

- two numbers correct and none incorrect

OR

- three numbers correct and one incorrect

OR

- 93, 94, 95, 96, 97

[2]

6. (a) Award **TWO** marks for the correct answer of 43, even if there are errors in the working. up to 2

If the answer is incorrect, award **ONE** mark for evidence of an appropriate calculation of multiplication by 4 and addition of 3, eg

- $3 + (4 \times 10)$
- $4 \times 10 + 3$
- $10 + 10 + 10 + 10 + 3$

OR **by drawing** OR **other methods**.

(b) 14 1

(c) Award **TWO** marks for expressions such as: up to 2

- $S = 4N + 3$
- $S = 3 + 4N$
- $S = N + N + N + N + 3$

If the answer is incorrect, award **ONE** mark for evidence of multiplying N by 4 in the expression, eg:

- 4N
- $4 \times N$
- N.4
- $N + N + N + N$

OR award **ONE** mark for evidence of adding 3 in the expression, eg:

- $N + 3$

Do not accept $S = \times 4 + 3 = N$ up to 2

[5]

7. Award **TWO** marks for the correct answer of p = 575 **AND** q = 425 Up to 2m

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, eg

- $q + q + 150 = 1000$
- $q + q = 850$
- $q = 850 \div 2$
- $p = q + 150$

***Both** p and q must be correct for the award of the marks.*
*Accept for **ONE** mark, answers given in the wrong order, ie p = 425 **AND** q = 575*

[2]

8. (a) 2 less than n joined to n – 2 1

(b) n plus n joined to 2n

as shown

Solving Money Problems

Decimals using money

Page 23

1) 5
2) £2.46
3) £2.86
4) £2.46
5) £1.43

Page 24 to 25

1) £16.75
2) £1.37
3) £2.96
4) £12.80
5) 19
6) £10.28
7) £101.95
8) 4
9) 8cm
10) 1

1. **a)** 28 **b)** 117.60 **c)** 1 400 **2.** **a)** 162 **b)** 8.10 **c)** 6 300
3. 17850 Euros **4.** £35 000 **5.** £70.00
6. £28.80 **7.** £36 £204 **8.** 54.60 Euros
9. £50 000 **10.** 630 Euros

Angles

Angles

Page 27

A = 60
b = 70
c = 126
d = 9
e = 31
f = 60
g = 30
h = 52
i = 72

Page 29

A = 45
b = 30
c = 90
d = 170
e = 60
f = 90
g = 45
h = 45
i = 45
j = 60
k = 80
L = 90
M =90
N = 90

Page 30

1) 80
2) 55
3) 142
4) 90
5) 102
6) 66 7)75 8)60 9) 65

Currency Exchange - Practice

Page 3

1. a)

80	**50**
40	**25**
Approx 96	60
Approx 16	10
45	**Approx 28**
40	25
0	**0**

b) Approx $192

c) £100

d) $1.6 are equivalent to £1.

Page 4

1.

£	Iraq Dinar
1	2 500
5	12 500
10	**25 000**
15	**37 500**
20	**50 000**
25	**62 500**
30	**75 000**

2. a) 55 000 **b)** Approx 32 500 **c)** Approx 70 000

Page 5

1. a) $1.61 **b)** $1.61 **c)** $1.63 **d)** Approx $1.615 **e)** $1.62
f) $1.595 **g)** $1.625 **h)** $162.50 **i)** $6.00 ($325.00 – $319.00)

Page 6

1. a) Approx 28.5 MW
b) Approx 26 MW
c) Approx 34.3 MW
d) People preparing midday meal.
e) Cooking finishes/people relaxing.
f) It was half time.
g) People put kettles on for tea/coffee.
h) People preparing evening meal/heating if weather cold.

Page 9

1. a) , **b)** and **c)** all false. The heights of the bars gives a false impression because the **sales** axis does not begin at £0.

d) The new graph gives a much clearer impression of the relative sales for each month. The technique of showing only the tops of columns is common when a false impression is called for.

Verbal Reasoning

TYPE TWENTY-NINE:

Train C
12 minutes
Tamworth/Dawtry
Train B
15.40

22
8
39
53
50 - 59

Duckworth
Brisworth
Pinesville
Pinesville
Pinesville

Verbal Reasoning

43. person horse
44. trunk stem
45. clock wheel

37. BEAD LEARN
38. SEAM TONE
39. LAND STABLE

1. encounter meet
2. lazy indolent
3. edible eatable

87. flee
88. red
89. range

100. LID ACE PEN T9/1

30. antler
31. decent
32. later
33. message

1. C
2. L

---

7. Y F
8. N
9. H

---

29. 5 2 1 3 4
30. 2 4 5 3 1

62. ill
63. ice
64. age

---

95. S
96. T
97. E

---

14. PEST
15. NEAR

---

12. D
13. E
14. D

45. 8
46. 32

75. 28
76. 8 2
77. 70 50
78. 269
79. 62 73

66. 14
67. 26
68. 16

28. 91
29. 91
30. J
31. R G
32. S

TYPE THIRTY-ONE

c
d
d
b
c
b
b
d

Non-Verbal Reasoning

Test 7

ASSESSMENT TEST 7

Section 1 — Rotate the Figure

1. D

The figure is rotated 90 degrees clockwise. Option A has a black rectangle instead of a black triangle. Option B is a reflected rotation. In option C, the trapezium is rotated differently from the rest of the figure.

2. B

The figure is rotated 180 degrees. Options A and C are the wrong shape. Option D is a reflected rotation.

3. A

The figure is rotated 135 degrees clockwise. Option B has two black triangles. Option C is a reflected rotation. In option D, the triangles are positioned incorrectly.

4. C

The figure is rotated 45 degrees clockwise. Option A is a reflected rotation. In option B, the circles are shaded incorrectly. In option D, there are squares instead of circles.

5. D

The figure is rotated 225 degrees clockwise (or 135 degrees anticlockwise). In option A, the black shapes and white shapes have swapped shadings. Option B is a reflected rotation. Option C is the wrong shape.

6. B

The figure is rotated 180 degrees. Options A and D are the wrong shape. Option C is a reflected rotation.

7. A

The figure is rotated 135 degrees clockwise. In option B, the grey and white shapes have swapped shadings. In option C, the white cross is positioned incorrectly. Option D is a reflected rotation.

8. D

The figure is rotated 135 degrees clockwise. Option A is the wrong shape. In option B, the white rectangle is in front of the black lines. Option C is a reflected rotation.

9. C

The figure is rotated 270 degrees clockwise (or 90 degrees anticlockwise). Option A is a reflected rotation. Option B is the wrong shape. Option D is a reflected rotation and the black circle is in the wrong position.

10. B

The figure is rotated 45 degrees clockwise. Option A is a reflected rotation. Option C is a reflection. Option D is the wrong shape.

Section 2 — Find the Figure Like the First Three

1. B

All figures must have four sides.

2. D

All figures must be reflections or rotations of the same arrow.

3. E

All figures must have four versions of the same shape. Two of the shapes must be black and two of the shapes must be white.

4. E

All figures must contain a large hatched circle and a small black circle.

5. C

In all figures, a T-shape must be crossed by two parallel lines.

6. A

In all figures, the number of points on the star must equal the number of sides of the white shape.

7. B

In all figures. the shape with the dotted outline must be half of the black shape.

8. C

All figures must have one white circle, one grey circle and one black circle. In all figures, the large shape must have six sides.

Section 3 — 3D Rotation

1. B
Shape B has been rotated 90 degrees clockwise in the plane of the page.

2. E
Shape E has been rotated 90 degrees away from you top-to-bottom.

3. C
Shape C has been rotated 90 degrees right-to-left.

4. D
Shape D has been rotated 90 degrees clockwise in the plane of the page.

5. E
Shape E has been rotated 90 degrees right-to-left.

6. B
Shape B has been rotated 90 degrees right-to-left.

7. D
Shape D has been rotated 90 degrees clockwise in the plane of the page.

8. A
Shape A has been rotated 90 degrees anticlockwise in the plane of the page. It has then been rotated 90 degrees away from you top-to-bottom.

9. C
Shape C has been rotated 90 degrees away from you top-to-bottom.

10. F
Shape F has been rotated 90 degrees right-to-left.

Section 4 — Odd One Out

1. B
All other figures have a solid outer line and a dashed inner line.

2. E
In all other figures, the black shapes are smaller versions of the outer shape.

3. D
All other figures are identical apart from rotation (the circles in D are in different places).

4. B
In all other figures, the shape on the right is a 45 degree clockwise rotation of the shape on the left.

5. C
In all other figures, the feet are on the straight side of the shield shape.

6. E
In all other figures, the diamond is on the left of the triangle.

7. A
In all other figures, the white shape is at the front.

8. B
In all other figures, the star is next to the flagpole.

Section 5 — 2D Views of 3D Shapes

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

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

3. B
There are five blocks visible from above, which rules out options A and C. There are three blocks in a row at the back of the shape, which rules out option D.

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

5. C
There are six blocks visible from above, which rules out options A and B. There is only one block on the right-hand side of the shape, which rules out option D.

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

7. D
There are five blocks visible from above, which rules out options B and C. There is one block at the front of the shape, which rules out option A.

8. C
There are five blocks visible from above, which rules out options A and B. There are two blocks at the front of the shape (with a gap between them), which rules out option D.