Fractions

TEST 1

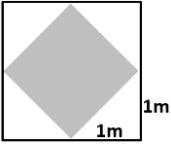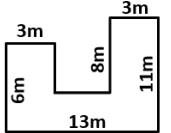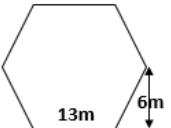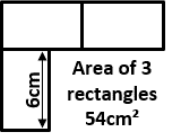| A	Answer
A1 $14\frac{8}{9} + 2\frac{1}{6}$	
A2 $5\frac{5}{6} - 2\frac{7}{10}$	
A3 $11\frac{1}{4} \div 2\frac{1}{5}$	
A4 $3\frac{1}{3} \times 6\frac{3}{5}$	
A5 Write as improper fraction $2\frac{8}{9}$	
A6 Simplify $\frac{38}{10}$ in a mixed number	
A7 Simplify $3\frac{27}{3}$	
A8 $(9\frac{5}{6} + 1\frac{7}{12}) \times \frac{1}{2}$	

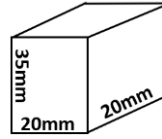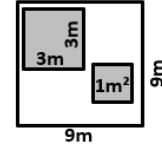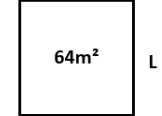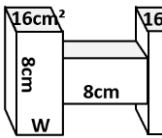| B	Answer
B1 What is a twelfth of 300?	
B2 Change $\frac{65}{9}$ into a mixed number.	
B3 Sum $2\frac{5}{6} + 3\frac{2}{12}$	
B4 How many thirds are there in the sum of $\frac{1}{2}$ and $\frac{5}{6}$?	
B5 What fraction is halfway between $\frac{5}{6}$ and $\frac{7}{12}$?	
B6 A ⅓ of a number is 6. Work out ½ of the number.	
B7 Multiply $3\frac{1}{15}$ by $\frac{1}{2}$	
B8 Divide 9 by 15	

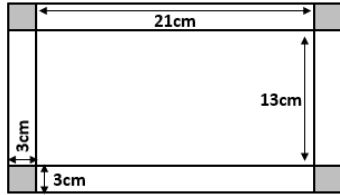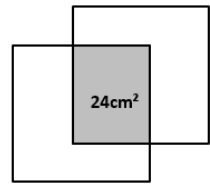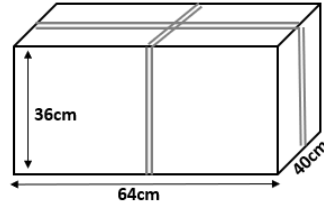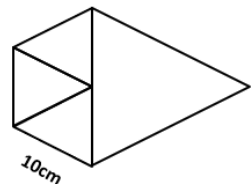| C	Answer
C1 There is $\frac{1}{4}$ of a pizza leftover in one box and $\frac{1}{3}$ of a pizza leftover in a second box. How much pizza has been eaten in total? Express your answer as a fraction.	
C2 A class of children get into eight equal groups. Three of the groups are all girls. The rest of the groups are all boys. What fraction of the class are boys?	
C3 Min prepared $5\frac{1}{7}$ litres of drinks for a party. Jane prepared $1\frac{1}{14}$ litres less than Min. What is the total volume of drinks that Min and Jane prepared altogether?	
C4 $\frac{1}{5}$ of a sports club are women, the rest are men. $\frac{1}{8}$ of the women wear glasses. If 140 women don't wear glasses, how many men and women are there in the club in total?	
C5 At a school play, $\frac{1}{6}$ of the students are Year-8's, $\frac{1}{3}$ are year-9's, and the remaining students are year 10's. If there are 40 Year-8's, how many are Year-10's are there?	
C6 A school has 600 pupils. 400 of these pupils are girls. $\frac{1}{2}$ of the girls like hockey and $\frac{1}{5}$ of the boys like hockey. Work out the total number of pupils in the school who like Hockey.	
C7 Matilda's mother says she has an hour before it's bedtime. Matilda spends $\frac{2}{5}$ of the hour watching TV and $\frac{3}{8}$ of the hour reading. She spends the rest of the time getting ready for bed. How long did Matilda take to get ready for bed? Answer in minutes.	
C8 50% of the people at a funfair went on the bumper cars. Two thirds of the people who rode in the bumper cars said they had fun. What fraction of the total number of people at the funfair rode in a bumper car and didn't have fun?	

SCORE

Algebra and Nth term

A

		Answer
A1	$12Y = 72$	$Y =$
A2	$9 = \frac{12}{6Y}$, express y as a fraction	$Y =$
A3	Solve $4(x + 3) = 34$	$X =$
A4	$2(C + 5) = 18$	$C =$
A5	If $x = 5$, then $2x^2 + 30 =$	
A6	$4(2x - 5) = 5x + 4$	$X =$
A7	$7(k - 3) = 3k - 5$	$K =$
A8	Simplify $ab + 4c + 4ab - 6c$	

B

		Answer
B1	Write an expression for the sequence 3, 9, 15, 21, 27	
B2	Write down the next two terms in the sequence 4, 7, 10	
B3	Solve $\frac{9}{X} = \frac{12}{4+X}$	$X =$
B4	$(2x + 50) = 6(x + 5)$	$X =$
B5	Find the area of a square whose length is 5+X	
B6	Divide 18KJ by 9J	
B7	Write an expression for the sequence 5, 11, 17, 23	
B8	What is the 6th term in the sequence 5,20,45,80,125	

C

Answer

C1   Write an expression for the sequence 0.25, 0.5, 0.75, 1

C2   Calculate the difference between the 12th term and 15th term in the sequence
8, 14, 20, 26, 32, 38

C3   Anne is x years old. Betty is twice as old as Anne. Chris is 5 years younger than Anne.
If their combined age is 61, work out the age of Anne in years and months.

C4   Write down an expression for the cost, in pence, of w biscuits at 15p each and 8 pieces of fruit
at 30p each.

C5   A fathom is a unit used by sailors to measure the depth of water, where 1 fathom = 6 feet.
If a submarine is 312 feet below the surface, how many fathoms is this?

C6   66 passengers get on the first stop on a bus. At the second stop X people get off and 4 get on.
At the third stop, half of the remaining passengers get off. There are now 20 passengers
remaining. Calculate X, the number of passengers that got off.

C7   The dosage 'D' of medicine given to be a child is calculated by the formula $D = MA \div 120$
M is age of child in months and A is the adult dose.
If child's age is 20 months and adult dose is 30ml, work out D   ml

C8   The cost of hiring a window cleaner is calculated by multiplying the number of windows by £2
and then adding £5 to the total.
If the bill comes to £21, calculate how many windows were cleaned.

SCORE

Area, Perimeter, Volume

A | Answer

A1	Shaded Area:	
A2	Unshaded Area:	
A3	Area:	
A4	Perimeter:	
A5	Perimeter:	
A6	Area:	
A7	Area of one rectangle:	
A8	Perimeter of shape:	

B | Answer

B1	Surface Area:	
B2	Volume:	
B3	Shaded Area:	
B4	Unshaded Area:	
B5	Length (L):	
B6	Perimeter:	
B7	Width (W):	
B8	Volume:	

C | Answer

C1 A flat piece of card has four 3x3 square corners cut out.
The card is then folded to make a box.
Calculate the volume of the box in cm³.

C2 Two identical squares overlap each other.
The shaded area overlapping measures 24cm².
The unshaded area not overlapping in is 74cm².
Calculate the area of one square.

C3 Darryl wants to ribbon around the parcel shown.
He will need enough ribbon to wrap length wise as well as around the centre as shown in the diagram.
What is the minimum amount of ribbon he will need?

C4 Harry draws 3 small equilateral triangles with each side 10cm in length. He attaches a large equilateral triangle to make the shape shown.
What is the total length of the outer perimeter of the shape shown.

C5 The shape shown is made of 3 identical rectangles.
Each rectangle is 14cm long and 8 cm wide.
Calculate the outer perimeter of the shape.

32

SCORE

Long Maths	Answer

L1 A horse-riding school charges an annual membership fee. The fee varies depending on the age of the rider.

In additional to the membership fee, you can pay for a single lesson or blocks of 5 or 10 lessons.

Age of Rider	Membership Fee	1 Lesson	5 Lessons	10 Lessons
5 - 8	£45	£18.00	£81.00	£144.00
9 - 15	£60	£22.00	£99.00	£176.00
16 +	£90	£30.00	£135.00	£240.00

(a) What is the percentage discount in buying a block of 10 lessons instead of buying 10 individual lessons?

(b) Felicity is 8 years old and wants to become a member and buy 15 lessons. What is the lowest cost she could have paid?

(c) Daniel is 18 years old. He has just paid £285 including membership. How many lessons did he pay for?

lessons

(d) Kerry wants to buy lessons for her twin 10-year-olds. She only has £250 to spend however, the school will only charge the price of one membership instead of two. What is the maximum number of lessons each twin can have?

(e) Michael will only pay for lessons weekly and has 50 lessons spread equally through the year. He turns 16 on the 1st of July. How many lessons would Michael need to cut back on in the second half of the year to keep it the same as the first half?

lessons

L2 The instructions and prices below are advertised on a local cinema's website. Read carefully before answering the questions:

Off Peak: Before 5pm Mon – Thurs, excluding Bank Holidays.
Peak: After 5pm Mon – Thurs / All Day Fri, Sat, Sun and Bank Holidays.
Family Ticket: Any 4 people. **Child** – person under 15 years old.

IMAX SCREEN	OFF PEAK	PEAK	
ADULT	£17.95	£19.95	**3D**
CHILD / SENIOR / STUDENT	£10.95	£13.95	**£2.50** EXTRA
FAMILY	£43.80	$55.80	PER TICKET

(a) How much will it cost for two students to watch a movie on a Bank Holiday Friday in the morning?

(b) How much will it cost of family of four to watch a 3D movie on a Monday night?

(c) How much extra per person does it cost to buy off peak family ticket compared to a peak ticket?

(d) What is the cheapest price available at 2pm on a Saturday afternoon for a family of six whose ages are 49, 44, 20, 14, 12 and 6?

(e) Some students watch a 3D movie on a Wednesday night at 10pm. They spend £160 in total which includes the tickets and drinks costing £28.40. How many students went to watch the movie?

SCORE

Test **1** Section **A**

A1	X = 180 – 66 – 66 = 48°	**48°**
A2	Y = 360 – 66 = 294	**294°**
A3	X = 360 – 290 = 70	**70°**
A4	Y = 180 – 70 – 34 = 76	**76°**
A5	X = 360 – 180 – 82 = 98	**98°**
A6	Y = 180 – 98 = 82	**82°**
A7	X = Semi circle = 180	**180°**
A8	Y = 180 – 132 = 48	**48°**

Test **1** Section **B**

B1	X = 48°	**48°**
B2	Y = 180 – 48 = 132	**132°**
B3	Calc Y first = 60 180 – 60 = 120, (180-120) ÷ 2 = 30	**30°**
B4	Y = 180 ÷ 3 = 60	**60°**
B5	5x = 180, x = 36	**36°**
B6	Y = 180 – 30 – 2(36) = 78	**78°**
B7	X = 180 – 140 = 40	**40°**
B8	2x = 80, so angle on line of y = 100 Y = 180 – 100 = 80	**80°**

Test **1** Section **C**

C1	180 – 37 – 33 = 110	**110°**
C2	Two exterior angles = 5 interior (2 x 123) = 5X X = 49.2°	**49.2°**
C3	180 – 52 – 70 = 58 360 = 59 + 63 + (35 + 58) + (x+52) 360 = 267 + x, so x = 93	**93°**
C4	180 – 90 – 40 = 50 180 – 50 – 78 = 52 X = 180 – 52 – 90 = 38	**38°**
C5	100 – 72 = 28 0.28 x 360 = 100.8	**100.8°**

Test **2** Section **A**

A1	X = 180 – 40 – 40 = 100	**100°**
A2	Y = 180 – 90 – 40 = 50	**50°**
A3	X = 180 – 52 – 49 = 69	**79°**
A4	Y = 360 – 49 = 131	**311°**
A5	X = 360 – 121 – 61 – 91 =	**87°**
A6	Y = 360 – 121 = 239	**239°**
A7	X = 180 – 32 = 148	**148°**
A8	180 – 49 – 32 = 99 180 – 99 = 81	**81°**

Test **2** Section **B**

B1	2x = 180 – 130. X = 25	**25°**
B2	Y = 180 – 25 = 155	**155°**
B3	X = 180 – 36 – 36 = 108	**108°**
B4	Y = 180 – 36 – (38 + 36) = 70	**70°**
B5	90 = 10x, X = 9	**9°**
B6	Y = 9 x 9 = 81	**81°**
B7	180 – 90 – 64 = 26 180 – 135 – 26 = 19 X = 180 – 19 – 90 = 71	**71°**
B8	Y = 360 – 135 – 90 – 90 = 45	**45°**

Test **2** Section **C**

C1	X = 360 – 90 – 98 – 98 = 74	**74°**
C2	Small triangle has angle 119° As Isosceles triangle, smaller angles = (180 – 119) ÷ 2 = 30.5° X = 180 – 30.5 = 145.9°	**145.9°**
C3	180 = x + x + 100, 2x = 80, x = 40	**40°**
C4	Opposite angles add up to 180 180 – 92 = 88	**88°**
C5	180 – 55 = 125 ÷ 2 = 62.5 180 – 62.5 – 75 = 42.5 X is part of isosceles 180 – 42.5 = 137.5 ÷ 2 = 68.75	**68.75**