


Year 5/6  
Maths  
Booklet 7

Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

1)  $7 \times 2 = \underline{\quad}$

2)  $3 \times 8 = \underline{\quad}$

3)  $4 \times 6 = \underline{\quad}$

4)  $2 \times 9 = \underline{\quad}$

5)  $6 \times 4 = \underline{\quad}$

6)  $8 \times 4 = \underline{\quad}$

7)  $7 \times 5 = \underline{\quad}$

8)  $9 \times 10 = \underline{\quad}$

9)  $6 \times 6 = \underline{\quad}$

1)  $6 \times \underline{\quad} = 18$

2)  $8 \times \underline{\quad} = 16$

3)  $\underline{\quad} \times 7 = 7$

4)  $\underline{\quad} \times 9 = 45$

5)  $7 \times \underline{\quad} = 21$

6)  $\underline{\quad} \times 6 = 36$

7)  $\underline{\quad} \times 8 = 40$

8)  $9 \times \underline{\quad} = 90$

9)  $\underline{\quad} \times 8 = 32$

10)  $\underline{\quad} \times 6 = 24$

11)  $7 \times \underline{\quad} = 63$

12)  $\underline{\quad} \times 6 = 0$

13)  $\underline{\quad} \times 8 = 80$

14)  $9 \times \underline{\quad} = 54$

15)  $6 \times \underline{\quad} = 42$

16)  $\underline{\quad} \times 8 = 56$

17)  $\underline{\quad} \times 9 = 81$

18)  $6 \times \underline{\quad} = 30$

19)  $8 \times \underline{\quad} = 48$

20)  $\underline{\quad} \times 9 = 18$

21)  $8 \times 6 = \underline{\quad}$

22)  $7 \times 9 = \underline{\quad}$

23)  $6 \times 7 = \underline{\quad}$

24)  $8 \times 8 = \underline{\quad}$

25)  $6 \times 3 = \underline{\quad}$

26)  $9 \times 6 = \underline{\quad}$

27)  $7 \times 5 = \underline{\quad}$

28)  $8 \times 9 = \underline{\quad}$

29)  $10 \times 7 = \underline{\quad}$

21)  $\underline{\quad} \times 7 = 49$

22)  $8 \times \underline{\quad} = 72$

23)  $\underline{\quad} \times 6 = 48$

24)  $9 \times \underline{\quad} = 45$

25)  $\underline{\quad} \times 7 = 63$

26)  $6 \times \underline{\quad} = 36$

27)  $8 \times \underline{\quad} = 64$

28)  $\underline{\quad} \times 6 = 42$

29)  $\underline{\quad} \times 9 = 72$

30)  $7 \times \underline{\quad} = 56$

31)  $\underline{\quad} \times 8 = 48$

32)  $6 \times \underline{\quad} = 60$

33)  $9 \times \underline{\quad} = 45$

34)  $\underline{\quad} \times 8 = 72$

35)  $\underline{\quad} \times 7 = 28$

36)  $9 \times \underline{\quad} = 81$








37)  $\underline{\quad} \times 6 = 6$

38)  $\underline{\quad} \times 8 = 64$

39)  $7 \times \underline{\quad} = 49$

40)  $\underline{\quad} \times 9 = 54$

## Steps to Success

Date			
Subject/s	<u>Maths</u>		
Learning Objective 	I understand distance time graphs		
		SA 	TA 
Success Criteria 	I can explain what the graph shows when there is a steep line, shallow line, horizontal line		
	I know that the x axis shows the time		
	I know the graphs can show: total distance, total time, and the slowest and fastest parts of the journey		
Support	Independent      Adult Support (      )      Group Work		
<p>Pre-task:</p> <p>Write a story and 3 questions for each of the 3 graphs below.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>a</p>  </div> <div style="text-align: center;"> <p>b</p>  </div> </div> <div style="text-align: center; margin-top: 20px;"> <p>c</p>  </div>			

## Teacher Led

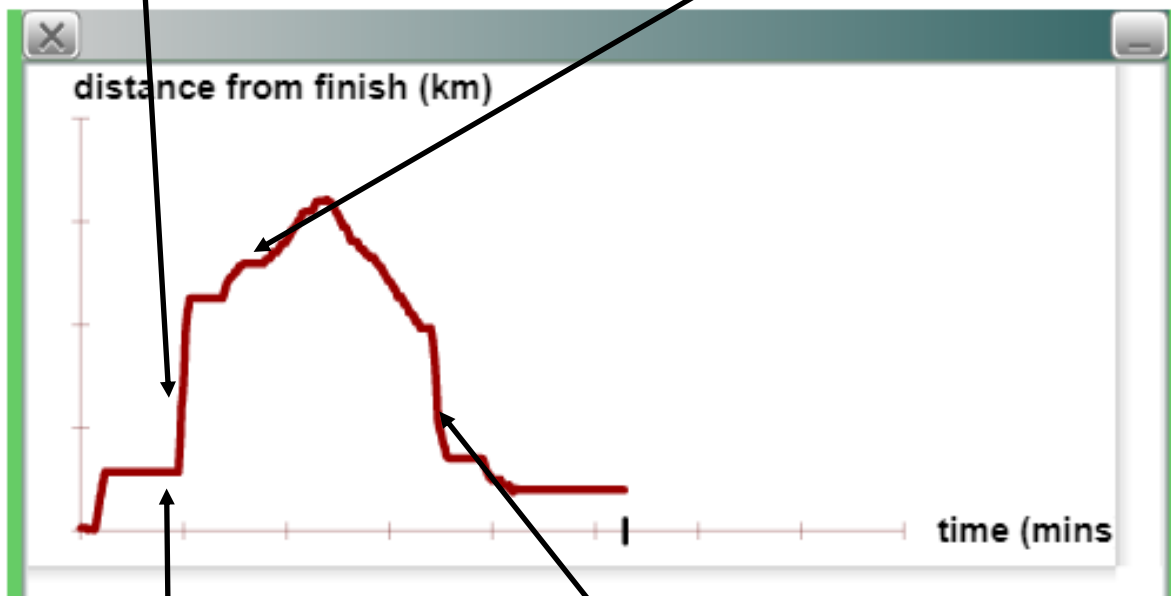
<https://nrich.maths.org/4803>

Take your 'dog' for a walk on the activity above. What happens to the graph when you move your mouse quickly? What happens when you move your mouse slowly? What happens when your dog walks further away from the house? What happens if you don't move the mouse at all?

<https://corbettmaths.com/2013/05/25/travel-graphs/>

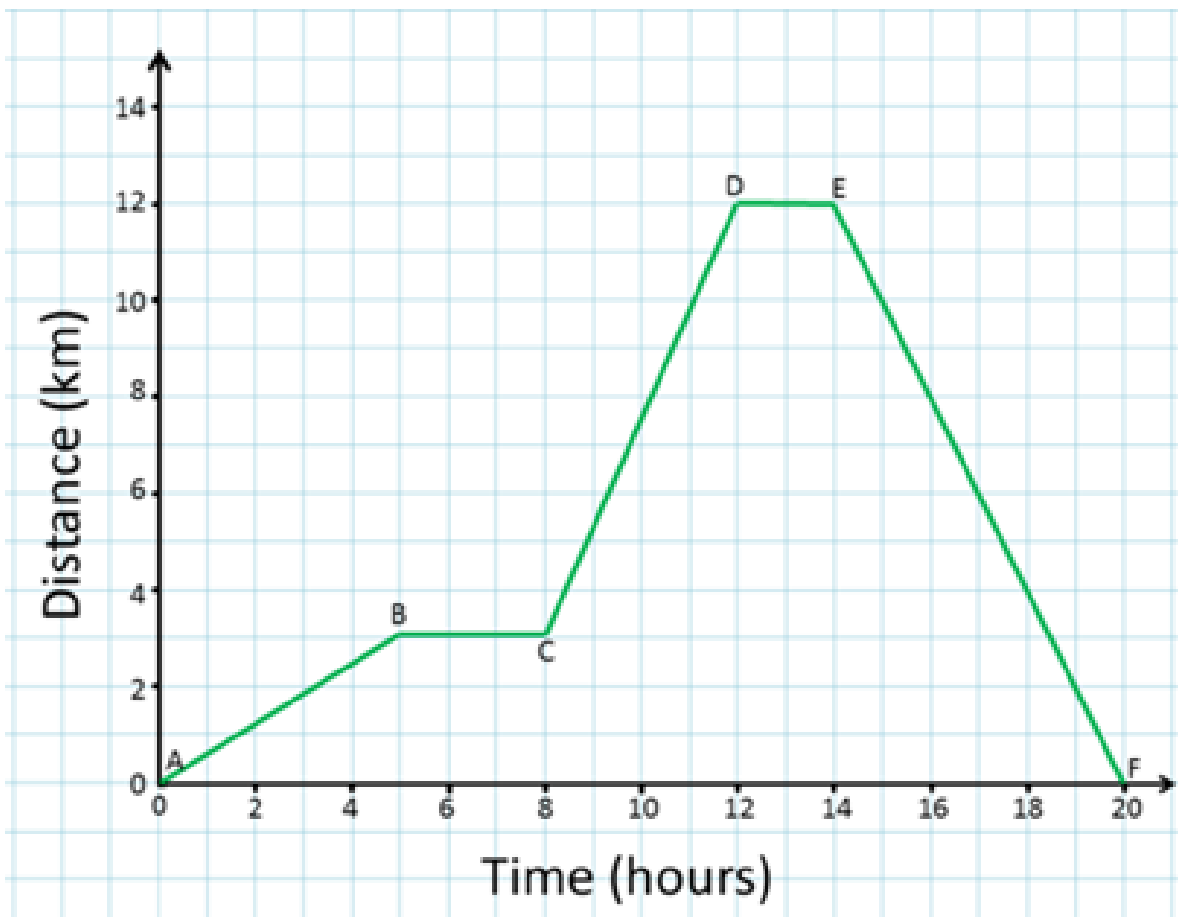
When you move quickly (so travel more of a distance in a short amount of time) the graph is really steep.

Here my line isn't as steep, my dog was still moving but at a slower speed.



Here the line on the graph is horizontal. This shows that time is still going but my distance is the same, meaning that my dog was standing still.

As the graph declines, the dog was getting closer to home/the starting position.



I can see that this person was travelling the fastest between points c and d because the graph is at the steepest. They travelled 9 km (difference between 3 and 12) in 4 hours (difference between 8 and 12).

I can see that they stopped for a break after 5 hours and they stopped for 3 hours (difference between 5 and 8). They also stopped between d and e for 2 hours.

To work out the speed that they were travelling between two points, I need to work out how long they were travelled for and how far they travelled.

Between E and F

Travelled 12km

It took them 6 hours.

Speed is written in per hour.

12km = 6 hours

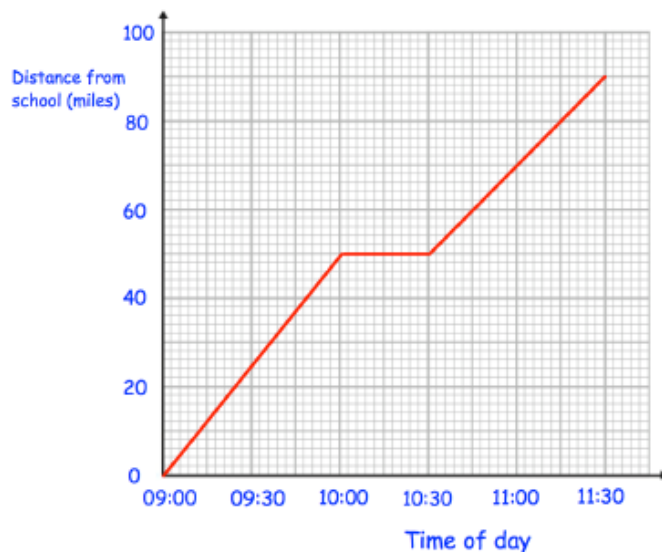
2 km = 1 hour

So 2km per hour was their speed.

## Fluency

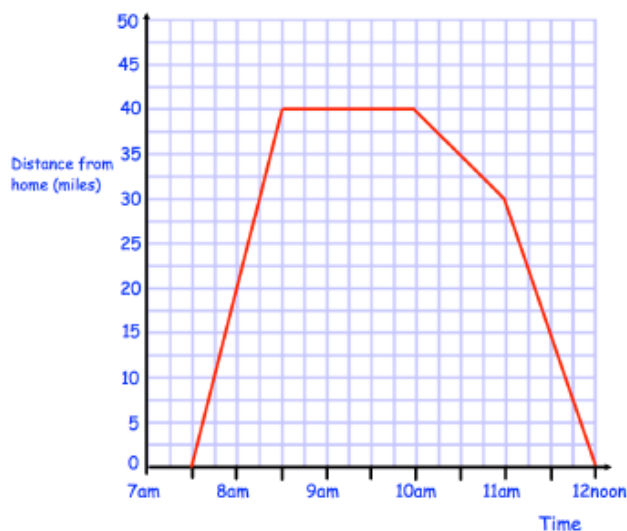
Question 1: The distance-time graph shows class 8A's journey to the zoo.  
They stopped for a picnic on the way to the zoo.

- (a) What time did the bus leave school?
- (b) What time did they stop for a picnic?
- (c) How far had they travelled when they stopped for a picnic?
- (d) How long did they stop for?
- (e) What time did they arrive at the zoo?
- (f) How far is the zoo from school?



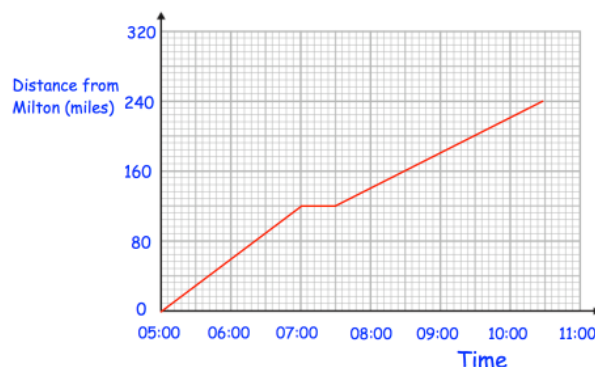
Question 2: Emma travelled to her Grandmother's house and back.  
The distance-time graph shows information about her journey.

- (a) What time did Emma begin her journey?
- (b) How far was Emma from home at 8am?
- (c) How long did Emma stay at her Grandmother's house?
- (d) What time did Emma leave her Grandmother's house?
- (e) How far was Emma from home at 11:45?
- (f) How far did Emma travel in total?



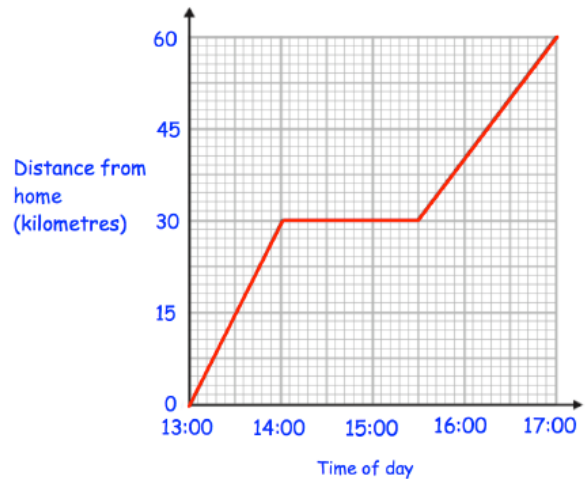
Question 3: A train travels from Milton to Redville, stops for 30 minutes, then travels to Leek.

- (a) How long did it take the train to travel from Milton to Redville?
- (b) How far is Redville from Milton?
- (c) Work out the speed of the train for the journey from Milton to Redville.
- (d) How long did it take the train to travel from Redville to Leek?
- (e) How far is Leek from Redville?
- (f) Work out the speed of the train for the journey from Redville to Leek.



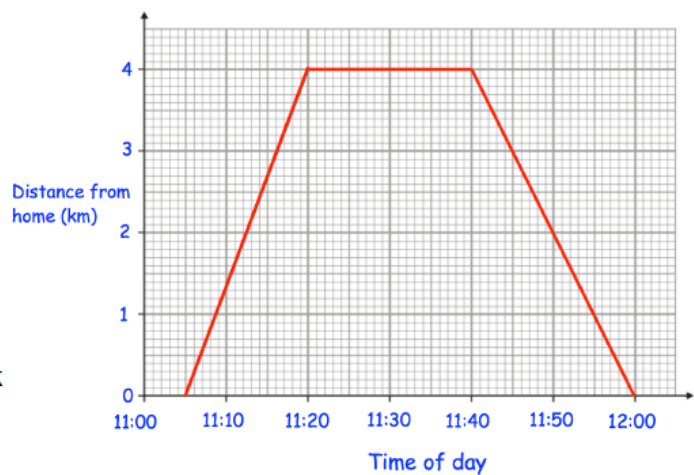
Question 4: Ben drove 60 kilometres, from his home to Liverpool.  
He stopped and visited his friend Tim on the way.

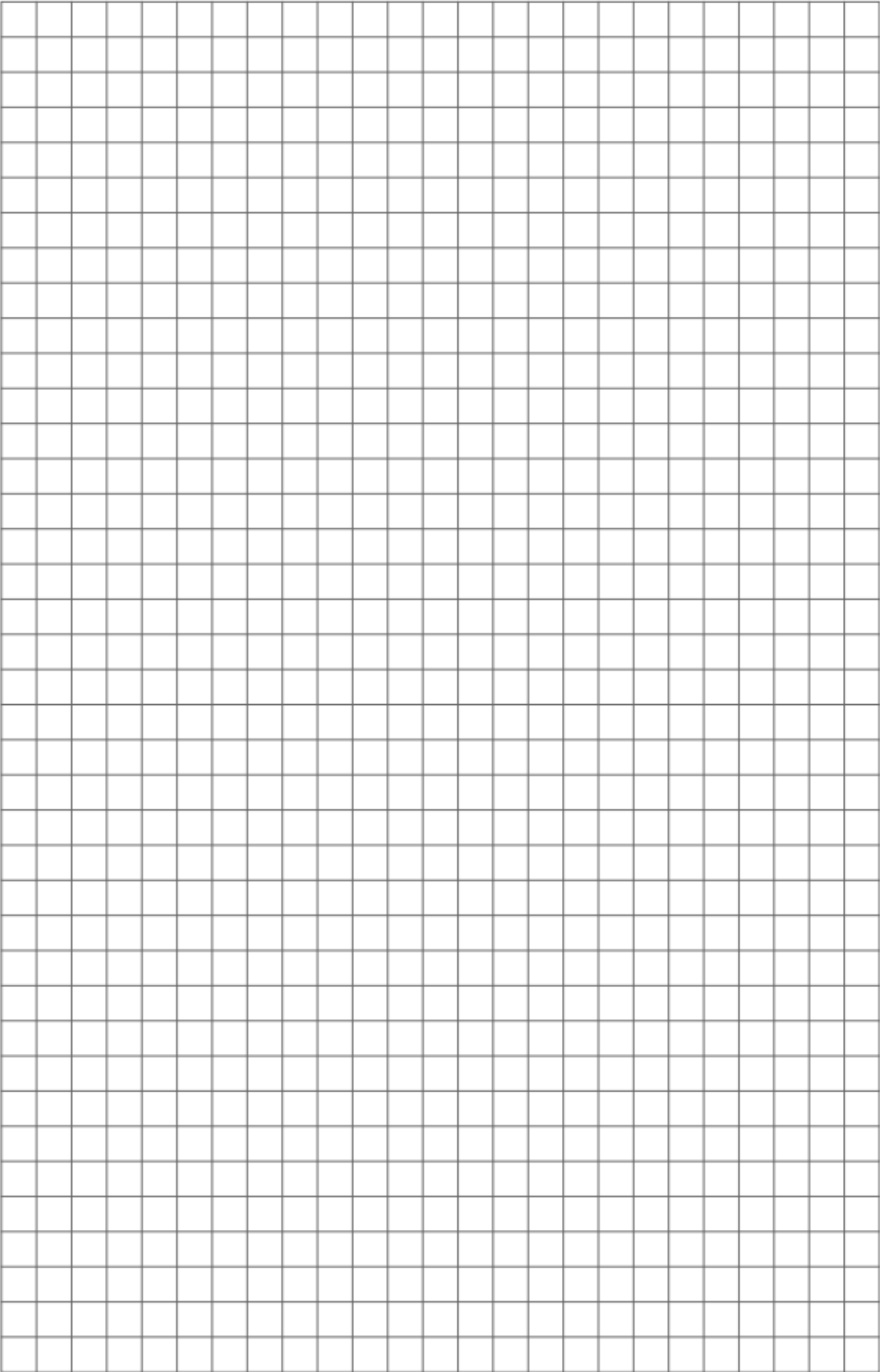
- (a) Work out Ben's speed for the first part of his journey.
- (b) How long did Ben spend visiting Tim?
- (c) Work out Ben's speed for the last part of his journey.



Question 5: Laura goes for a cycle from her house to the post office, 4km away.

- (a) How long did it take Laura to cycle to the post office?
- (b) Work out Laura's speed cycling to the post office.
- (c) How long did Laura spend at the post office?
- (d) Work out Laura's speed cycling back home.

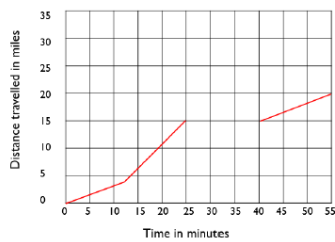






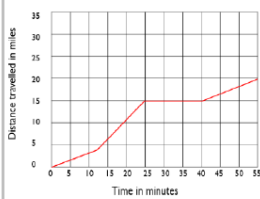
## Problem Solving and Reasoning

This graph shows the distance a car travelled.

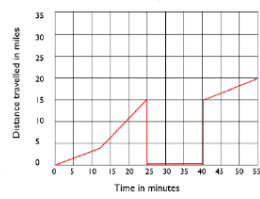


Kim and Rory were asked to complete the graph to show the car had stopped. Here are their completed graphs.

Kim:

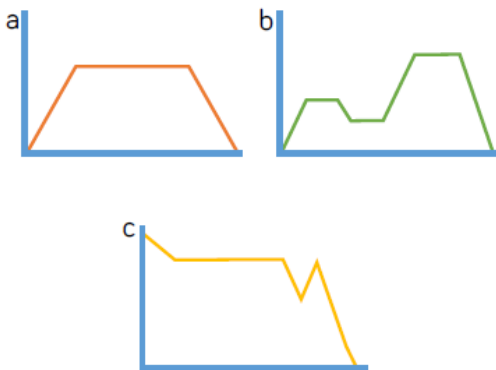


Rory:

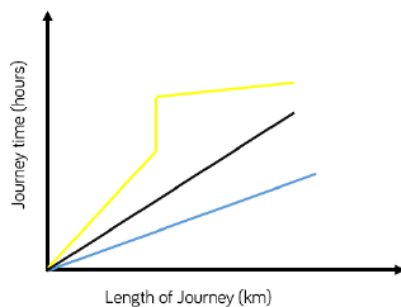


Who has completed the graph correctly?

Write a story and 3 questions for each of the 3 graphs below.



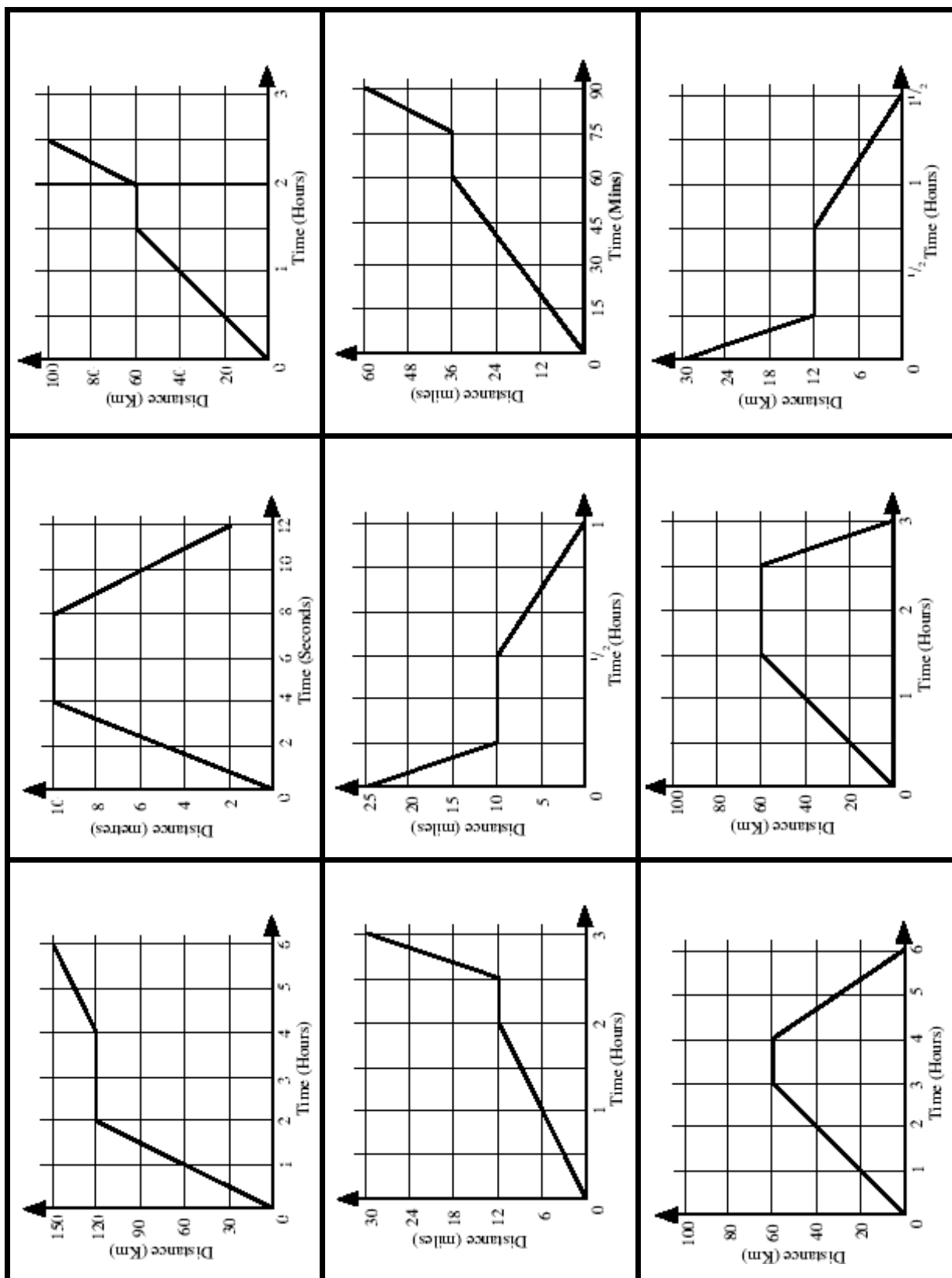
The graph below shows some of Mr Woolley's journeys.



What is the same and what is different about each of these journeys?

What might have happened during the yellow journey?

Match the graph to the correct explanation! Remember to look at the unit of measurement on the axis too!



<p>A car travels at 60 km/h for 2 hours on the motorway. It stops at the service station for two hours, then travels in heavy traffic at 15 km/h for 30 km</p>	<p>A toddler rides his bike up the pavement for 10m. He then turns around and rides back. 2m from home, he hits a bump and falls off his bike.</p>	<p>A coach leaves the station at 10am and reaches Gloucester station at 11.30am. It stops here for half an hour. It then carries on for 30 minutes reaching Worcester 40 km later.</p>
<p>A cyclist rides for 2 hours travelling at 6 miles per hour. He then stops to rest for 30 minutes then continues for a further 18 miles.</p>	<p>A train is travelling back to Bristol at a speed of 90 mph. A tree has fallen on the track at Bath and the train stops for 20 minutes while it is cleared. The train then travels the remaining 10 miles slowly.</p>	<p>A motorbike rider rides for 36 miles at a steady speed. She stops to read the map for 15 minutes then rides for the remaining 24 miles at a very illegal 112 mph.</p>
<p>A man drives to his friend's house at a steady speed of 20 km/h, stops for an hour then returns home in 2 hours.</p>	<p>A bus leaves school at 9am and gets to its destination at 10.30am. The children look around the museum for an hour then return back to school. The bus arrives back at midday.</p>	<p>A cyclist rides downhill towards home for 15 minutes. At the bottom of the hill she stops for half an hour for a drink. She then continues uphill for the remaining 12 km.</p>

## Fluency Answers

Question 1(a): 09:00 or 9am

1(b): 10:00 or 10am

1(c): 50 miles

1(d): 30 minutes

1(e): 11:30 or 11:30am

1(f): 90 miles

Question 2(a): 07:30 or 7:30am

2(b): 20 miles

2(c): 1 hour and 30 minutes

2(d): 10:00 or 10am

2(e): 7.5miles

2(f): 80 miles (40 there and 40 back)

Question 3(a): 2 hours

3(b): 120 miles

3(c): 60mph

3(d): 3 hours

3(e): 120 miles

3(f): 40mph

Question 4(a): 30mph

4(b): 1 hour and 30 minutes

4(c) 20mph

Question 5(a): 15 minutes

5(b): 16mph


5(c): 20 minutes

5(d): 12mph

### Answers


Kim has completed the graph correctly. The car has still travelled 15 miles in total, then stopped for 15 minutes before carrying on.

Possible responses:  
All the journeys were nearly the same length.  
The journeys all took different lengths of time.  
The black and blue journey were travelling at constant speeds but black was travelling quicker than blue.  
During the yellow journey, Mr Woolley might have been stuck in traffic. This might explain why the time increases but the length of the journey doesn't.

Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

$3 \times 4 =$	$7 \times 8 =$	$9 \div 3 =$	$36 \div 12 =$
$21 \div 7 =$	$8 \times 6 =$	$12 \times 4 =$	$10 \times 8 =$
$4 \times 8 =$	$3 \times 9 =$	$4 \times 7 =$	$3 \times 11 =$
$40 \div 8 =$	$15 \div 3 =$	$27 \div 9 =$	$20 \div 4 =$
$4 \times 11 =$	$48 \div 6 =$	$8 \div 4 =$	$6 \times 8 =$
$5 \times 8 =$	$11 \times 3 =$	$5 \times 8 =$	$80 \div 10 =$
$24 \div 4 =$	$88 \div 11 =$	$24 \div 3 =$	$4 \times 1 =$
$72 \div 8 =$	$8 \times 4 =$	$9 \times 4 =$	$8 \times 5 =$
$10 \times 3 =$	$16 \div 4 =$	$8 \times 11 =$	$6 \times 4 =$
$5 \times 4 =$	$32 \div 8 =$	$6 \div 3 =$	$3 \div 3 =$
$12 \div 3 =$	$3 \times 6 =$	$48 \div 12 =$	$44 \div 11 =$
$4 \times 9 =$	$8 \div 8 =$	$3 \times 4 =$	$7 \times 3 =$
$11 \times 8 =$	$4 \times 3 =$	$0 \times 8 =$	$12 \times 8 =$
$3 \times 12 =$	$48 \div 8 =$	$18 \div 3 =$	$28 \div 4 =$
$24 \div 8 =$	$30 \div 10 =$	$3 \times 3 =$	$56 \div 7 =$
$27 \div 3 =$	$8 \times 9 =$	$64 \div 8 =$	$4 \times 12 =$
$7 \times 4 =$	$10 \times 4 =$	$36 \div 4 =$	$5 \times 3 =$
$36 \div 9 =$	$16 \div 8 =$	$8 \times 8 =$	$56 \div 7 =$
$56 \div 8 =$	$8 \times 3 =$	$21 \div 3 =$	$4 \times 6 =$
$3 \times 0 =$	$72 \div 9 =$	$4 \times 12 =$	$32 \div 4 =$
$12 \div 4 =$	$3 \times 8 =$	$96 \div 12 =$	$12 \times 3 =$
$33 \div 3 =$	$4 \times 4 =$	$24 \div 8 =$	$7 \times 8 =$
$6 \times 3 =$	$9 \times 8 =$	$2 \times 3 =$	$9 \times 3 =$
$40 \div 4 =$	$4 \div 4 =$	$11 \times 4 =$	$21 \div 3 =$
$28 \div 7 =$	$3 \times 7 =$	$32 \div 8 =$	$8 \times 12 =$

### Steps to Success

Date	
Subject/s	Maths
Learning Objective 	To apply and use maths to solve problems

A crime was committed at a sports centre. The funding for new exercise equipment was stolen. It was last seen on Friday afternoon when it was handed over by the fundraising team to the staff. The only clue left behind was a sports bag with five items inside. It was found by the manager.

The manager and the bag have since vanished but before he did so he was able to list (in code) the 5 items in the bag. There are 32 suspects. Each item will eliminate half of them. Can you crack the codes to do this? What was in the bag? Who is guilty?

Forename	Surname	Sex	Hat	Mobile	Glasses	Smoke	Guilty?
Aisha	Khan	F	Yes	LG	Yes	Yes	
Ann	Sugden	F	Yes	HTC	No	Yes	
Brad	Tremble	M	No	Motorola	No	Yes	
Brian	Anderson	M	Yes	Samsung	No	Yes	
Eleanor	Watson	F	No	LG	No	No	
Gracie	Spencer	F	No	Samsung	Yes	No	
Gretta	Court	F	No	Samsung	No	No	
Hassan	Aziz	M	Yes	Samsung	No	No	
Henry	Plank	M	Yes	iphone	No	No	
Hubert	Williams	M	Yes	Nokia	No	Yes	
Ian	Sanderson	M	No	Samsung	No	Yes	
India	Fluter	F	No	iphone	No	Yes	
Isobel	Travis	F	Yes	Samsung	No	No	
Jack	Bumstead	M	Yes	Samsung	Yes	No	
Jeremy	Windows	M	Yes	LG	Yes	Yes	
John	Garneer	M	No	Samsung	Yes	Yes	
Leila	Masters	F	No	emerald	Yes	Yes	
Malika	Obed	F	Yes	Motorola	Yes	No	
Manfred	Marbles	M	No	Nokia	No	No	
Mary	Latchford	F	Yes	Samsung	No	Yes	
Orla	Cook	F	No	Blackberry	Yes	No	
Rainbow	Drizzle	F	No	Samsung	No	Yes	
Rhianna	Shard	F	Yes	Samsung	Yes	Yes	
Saskia	Gases	F	Yes	Nokia	No	No	
Stan	Baines	M	No	Blackberry	Yes	Yes	
Stephanie	Biggins	F	No	Samsung	Yes	Yes	
Stuart	Robins	M	No	Samsung	Yes	No	
Summer	Roach	F	Yes	Samsung	Yes	No	
Terence	Knox	M	Yes	Samsung	Yes	Yes	
Tomas	Sminkles	M	Yes	iphone	Yes	No	
Tommy	Crispin	M	No	Nokia	Yes	No	
Usama	Iqbal	M	No	Samsung	No	No	

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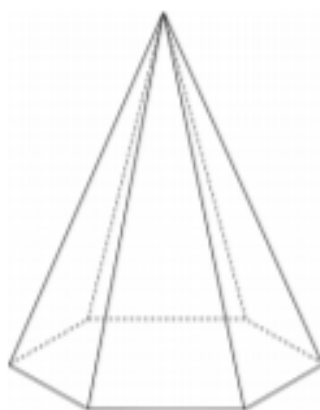
### Clue 1—It's all in 3D

A =1, b=2, c=3 etc

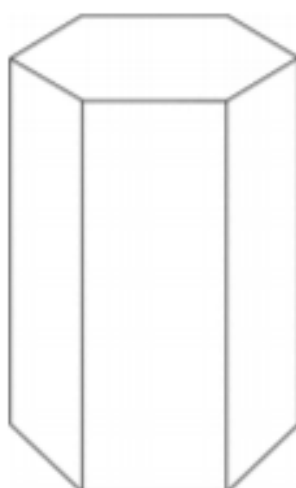
1	Number of vertices a cone has		
2	Number of vertices a hexagonal pyramid has		
3	3 x the number of faces a cube has		
4	Number of faces a square based pyramid has		
5	Number of vertices of a square based pyramid		
6	Twice the number of faces of a hexagonal pyramid		
7	Number of vertices of an octagonal prism		
8	Half the number of vertices of a pentagonal prism		
9	Number of faces a sphere has		
10	1 less than the number of edges a cuboid has		
11	1 less than the vertices of a triangular prism		
12	Number of vertices a tetrahedron has		
13	Number of faces a hexagonal prism has		
14	The number of circular faces a cone has		
15	Twice the number of faces of an octagonal prism		



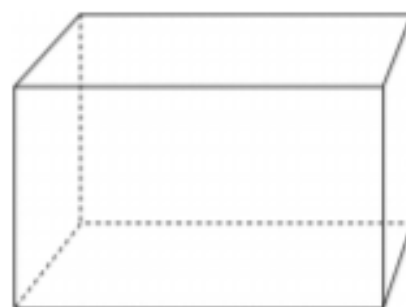
Cylinder



pyramid



prism



cuboid



## Clue 2 - Divide and Conquer

You have to find out the highest number from 2,3,5,6 & 10 which will divide into each of the numbers below. How do you know if a number is a multiple of each of those factors ? There is no need for a calculator – for 2, 5 & 10, you look at the last digit of a number – even numbers are divisible by 2, numbers ending in 0 are divisible by 10 and numbers ending in 5 or 0 are divisible by 5.

To find out if a number is a **multiple of 3, add up the digits**. If the answer is a multiple of 3, then the number is. eg  $258 : 2+5+8=15$  (15 is a multiple of 3 so 258 is).

Multiples of 6 are **even and divisible by 3**. eg 72 – even and  $7+2=9$  (divisible by 3)

Number of digits in number	Highest factor				
	2	3	5	6	10
2	a	e	i	o	u
3	b	c	d	f	g
4	h	j	k	l	m
5	n	p	r	s	t
6	v	w	q	y	z

Number	Highest Factor	letter
34		
12845		
81		
357		
27		
65		
14637		
87540		
348		
98645		
78		
6450		
26322		
16803		
99		
123		

Number	Highest Factor	letter
84642		
82		
365848		
39		
87625		
41532		
654		
84		
38475		
129		
96		
87622		
74160		
92		
831		
45710		
84132		

### Clue 3 –A new angle on the case.

Draw 8 lines with perfect accuracy to get 8 words. Rearrange the order to get the clue.

the	male	iron	female	glasses	freckles
a	hat	skirt	beard	for	he
wears	tights	no	murderer	knife	gun
neck	face	escape	she	cigars	case
cigarettes	smoke	mobile	inhale	unhealthy	running
cold	kill	rope	candlestick	library	kitchen
plum	prison	green	mustard	police	white

A \_\_\_\_\_ B C \_\_\_\_\_ D

dead	alive	gun	run	clue	no
HTC	Samsung	Nokia	iphone	code	Motorola
yes	poison	sugar	cheeks	face	DNA
a	the	vital	Blackberry	phone	escape
charger	treasure	LG	Cookie	text	bury
spots	Boots	chest	ink	invisible	new
secret	fish	passage	stairs	guilty	old

F \_\_\_\_\_ G H \_\_\_\_\_ I

BAX	100°	AX	5.7cm
ABY	128°	BY	7.3cm
DCZ	132°	CZ	4.0cm
CDM	81°	DM	3.9cm
GFR	24°	FR	10.0cm
FGW	34°	GW	7.0cm
IHT	27°	HT	4.8cm
HIQ	29°	IQ	12.3cm

A	10°C
C	9
E	8
G	7
I	6
K	5
M	4
O	3
Q	2
S	1
U	0°C
W	-1
X	-2
Z	-3
B	-4
D	-5
F	-6
H	-7
J	-8
L	-9
N	-10
P	-11
R	-12
T	-13
V	-14
Y	-15
.	-16°C

### Clue 4—The big freeze

The temperature scale has letters attached. Decipher the message as the temperature rises and falls. Start each question at 0°C

1)  $-5 + 15$

2)  $-1 - 3$

3)  $-4 - 8$

4)  $-6 + 12$

5)  $-3 + 10$

6)  $-3 - 4$

7)  $2 - 15$

8)  $-7 - 8$

9)  $-3 + 11$

10)  $2 - 11$

11)  $-14 + 5$

12)  $-4 + 7$

13)  $8 - 9$

14)  $4 - 13$

15)  $-5 + 11$

16)  $10 - 3$

17)  $-16 + 9$

18)  $-8 - 5$

19)  $-4 + 12$

20)  $6 - 18$

21)  $-12 - 4$

### Clue 5 – Null Points

This clue includes lots of nulls – letters put in to disguise the real message.

Remove the nulls and everything will be clear.

21	46	9	97	68	46	81	100	29	6	49	31	33	775	85	39	28	17	19	72
d	r	e	a	m	y	b	a	b	y	d	o	l	l	p	r	e	t	t	y

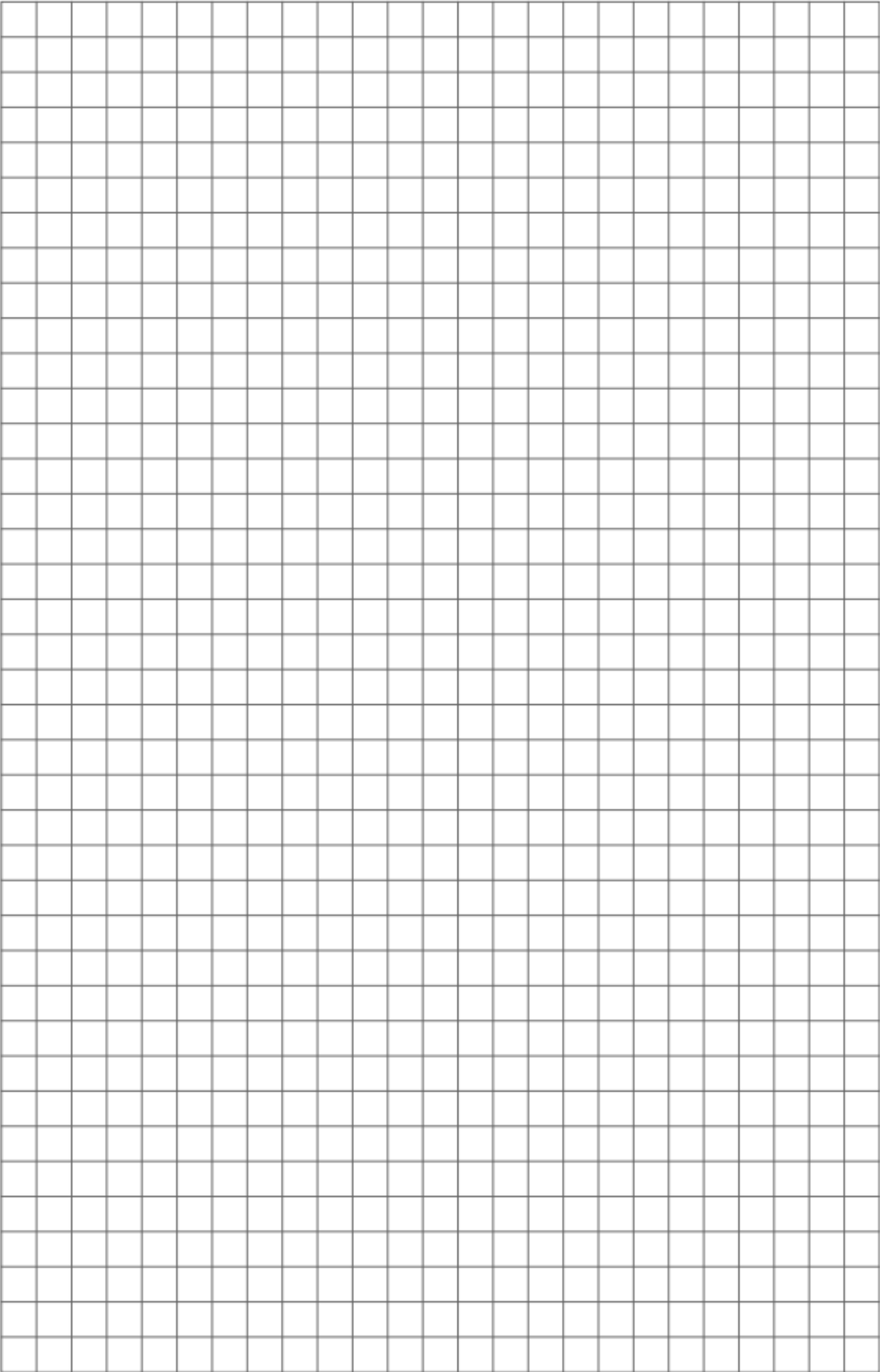
87	60	81	8	43	13	24	36	72	45	82	27	1	37	165	64	55	47	58	35
l	i	t	t	l	e	f	l	u	f	f	y	m	o	u	s	e	f	a	t

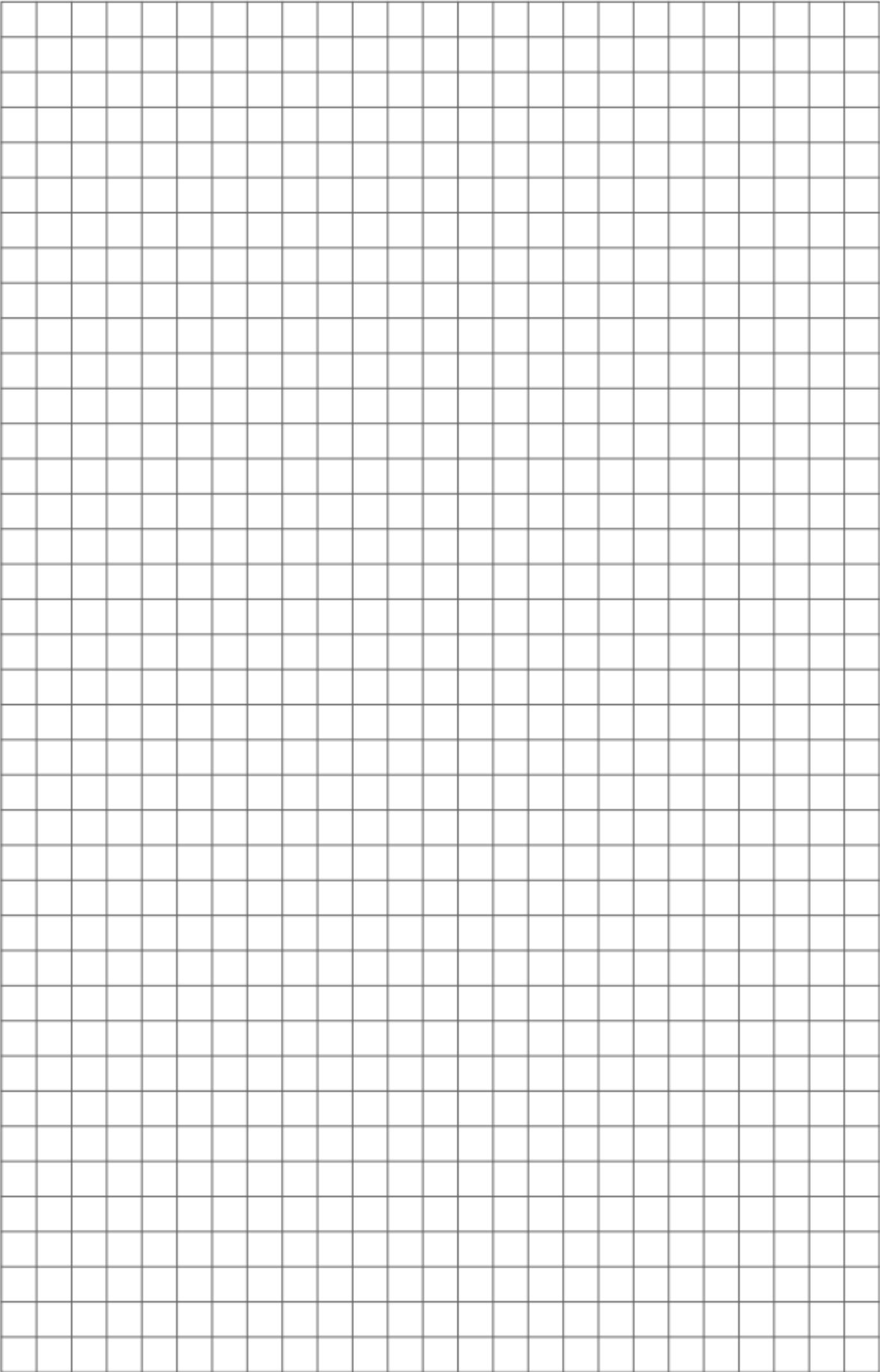
2	13	93	76	14	25	69	73	67	215	95	99	79	121	12	86	63	83	9	70
r	a	t	m	y	s	o	f	t	&	c	r	e	a	m	y	t	r	u	e

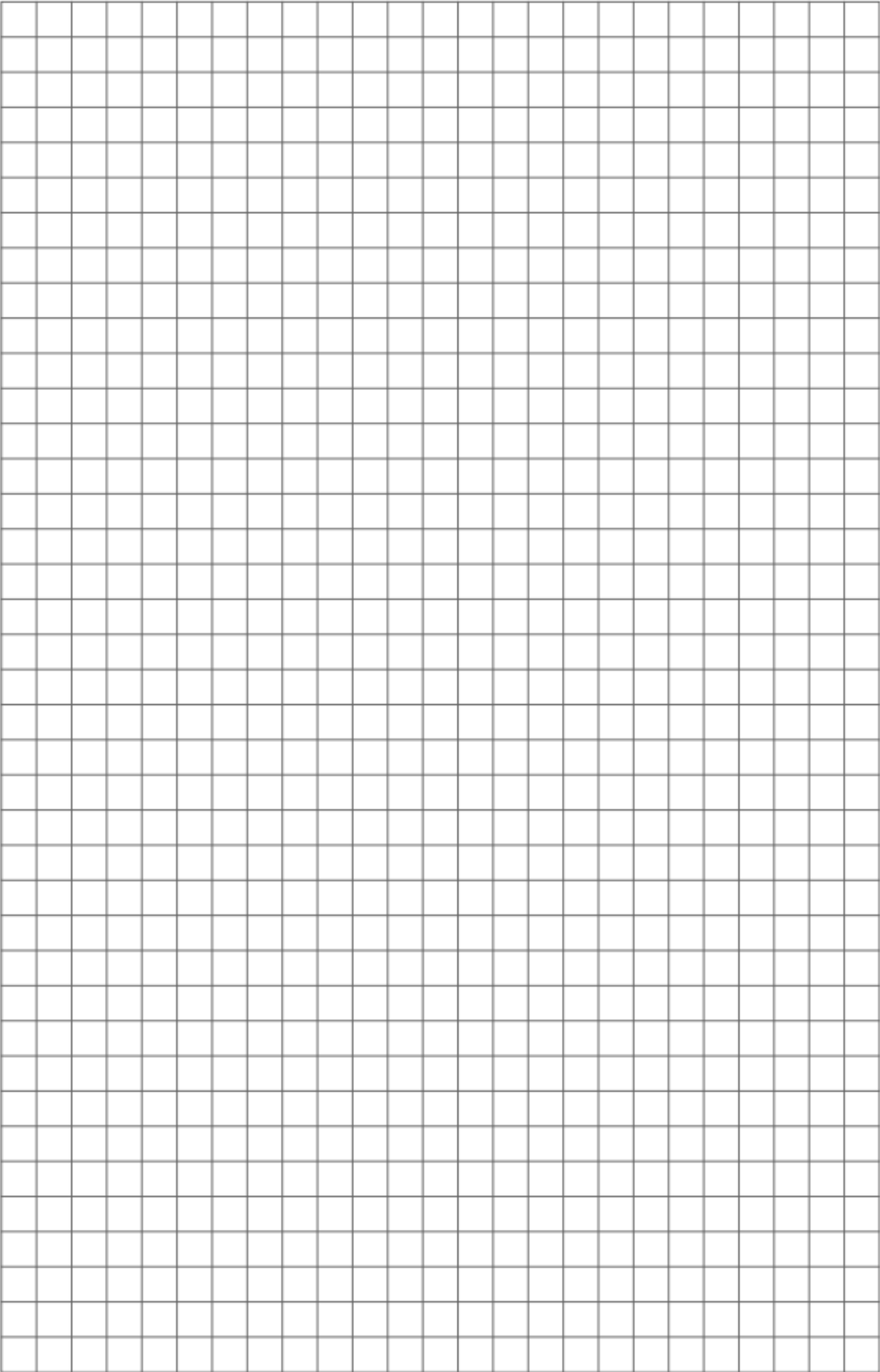
145	71	23	92	144	15	42	77	16	89	94	26	9	59	57	98	51	4	52	53
a	s	h	i	n	e	g	l	e	a	m	f	a	v	o	u	r	i	t	e

Cross out these numbers and the letters below them:

1. All square numbers.
2. All multiples of 5
3. All even numbers
4. All multiples of 11
5. All multiples of 3

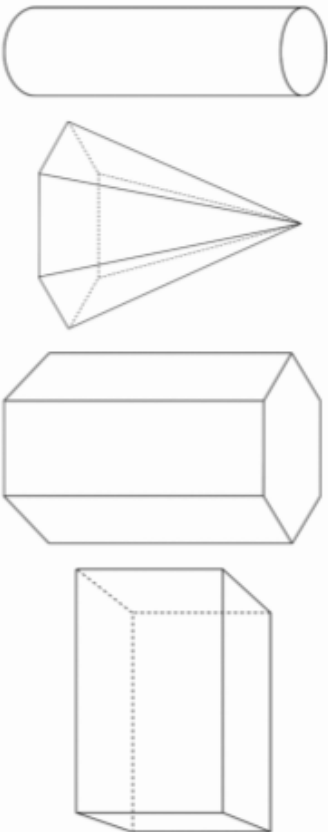






Clue 1—it's all in 3D

1	Number of vertices a cone has	1	a
2	Number of vertices a hexagonal pyramid has	7	g
3	3 x the number of faces a cube has	18	r
4	Number of faces a square based pyramid has	5	e
5	Number of vertices of a square based pyramid	5	e
6	Twice the number of faces of a hexagonal pyramid	14	n
7	Number of vertices of an octagonal prism	16	p
8	Half the number of vertices of a pentagonal prism	5	e
9	Number of faces a sphere has	1	a
10	1 less than the number of edges a cuboid has	11	k
11	1 less than the vertices of a triangular prism	5	e
12	Number of vertices a tetrahedron has	4	d
13	Number of faces a hexagonal prism has	8	h
14	The number of circular faces a cone has	1	a
15	Twice the number of faces of an octagonal prism	20	t



Clue 2 - Divide and Conquer

You have to find out the highest number from 2,3,5,6 & 10 which will divide into each of the numbers below. How do you know if a number is a multiple of each of those factors ?

There is no need for a calculator – for 2, 5 & 10, you look at the last digit of a number – even numbers are divisible by 2, numbers ending in 0 are divisible by 10 and numbers ending in 5 or 0 are divisible by 5.

To find out if a number is a **multiple of 3, add up the digits**. If the answer is a multiple of 3, then the number is. eg 258 : 2+5+8=15 (15 is a multiple of 3 so 258 is).

Multiples of 6 are **even and divisible by 3**. eg 72 – even and 7 +2=9 (divisible by 3)

Number of digits	Highest factor				
	2	3	5	6	10
2	a	e	i	o	u
3	b	c	d	f	g
4	h	j	k	l	m
5	n	p	r	s	t
6	v	w	q	y	z

Number	Highest Factor	letter	Number	Highest Factor	
34	2	A	84642	6	S
12845	5	R	82	2	A
81	3	E	365848	2	V
357	3	C	39	3	E
27	3	E	87625	5	R
65	5	I	41532	6	S
14637	3	P	654	6	F
87540	10	T	84	6	O
348	6	F	38475	5	R
98645	5	R	129	3	C
78	2	O	96	6	O
6450	10	M	87622	2	N
26322	6	S	74160	10	T
16803	3	P	92	2	A
99	3	E	831	3	C
123	3	C	45710	10	T
			84132	6	S



### Clue 3 – A new angle on the case.

Draw 8 lines with perfect accuracy to get 8 words. Rearrange the order to get the clue.

the	male	plonker	female	glasses	freckles
a	hat	skirt	beard	for	he
wears	tights	no	murderer	knife	gun
neck	face	escape	she	cigars	case
cigarettes	smoke	mobile	inhale	unhealthy	running
cold	kill	Rope	candlestick	library	kitchen
plum	prison	green	mustard	police	white

dead	alive	gun	run	clue	no
HTC	Samsung	Nokia	iphone	code	Motorola
yes	poison	sugar	cheeks	face	DNA
a	the	vital	Blackberry	phone	escape
charger	treasure	LG	Cookie	text	bury
spots	Boots	chest	ink	invisible	new
secret	fish	passage	stairs	guilty	old

BAX	100°	AX	5.7cm
ABY	128°	BY	7.3cm
DCZ	132°	CZ	4.0cm
CDM	81°	DM	3.9cm
GFR	24°	FR	10.0cm
FGW	34°	GW	7.0cm
IHT	27°	HT	4.8cm
HIQ	29°	IQ	12.3cm

### Clue 4—The big freeze

The temperature scale has letters attached. Decipher the message as the temperature rises and falls. Start each question at 0°C

A	10°C	1)	-5 + 15	A
C	9	2)	-1 - 3	B
E	8	3)	-4 - 8	R
G	7	4)	-6 + 12	I
I	6	5)	-3 + 10	G
K	5	6)	-3 - 4	H
M	4	7)	2 - 15	T
O	3	8)	-7 - 8	Y
Q	2	9)	-3 + 11	E
S	1	10)	2 - 11	L
U	0°C	11)	-14 + 5	L
W	-1	12)	-4 + 7	O
X	-2	13)	8 - 9	W
Z	-3	14)	4 - 13	L
B	-4	15)	-5 + 11	I
D	-5	16)	10 - 3	G
F	-6	17)	-16 + 9	H
H	-7	18)	-8 - 5	T
J	-8	19)	-4 + 12	E
L	-9	20)	6 - 18	R
N	-10	21)	-12 - 4	.
P	-11			
R	-12			
T	-13			
V	-14			
Y	-15			
.	-16°C			

### Clue 5 – Null Points

This clue includes lots of nulls – letters put in to disguise the real message.  
Remove the nulls and everything will be clear.

21	46	9	97	68	46	81	100	29	6	49	31	33	775	85	39	28	17	19	72
d	r	e	a	m	y	b	a	b	y	d	o	l	i	p	r	e	t	t	y


87	60	81	8	43	13	24	36	72	45	82	27	1	37	165	64	55	47	58	35
i	i	t	t	i	e	f	i	u	f	f	y	m	o	u	s	e	f	a	t

2	13	93	76	14	25	69	73	67	215	95	99	79	121	12	86	63	83	9	70
r	a	t	m	y	s	o	f	t	&	c	r	e	a	m	y	t	r	u	e


145	71	23	92	144	15	42	77	16	89	94	26	9	59	57	98	51	4	52	53
a	s	h	i	n	e	g	i	e	a	m	f	a	v	o	u	r	i	t	e

Cross out these numbers and the letters below them:

1. All square numbers.
2. All multiples of 5
3. All even numbers
4. All multiples of 11
5. All multiples of 3

Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

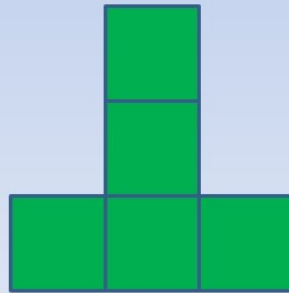
1	9 X 7		30	6 x 9		59	9 X 4	
2	8 x 4		31	12 x 3		60	7 x 6	
3	7 x 10		32	3 x 8		61	4 x 8	
4	9 x 9		33	8 X 8		62	12 X 2	
5	6 x 2		34	6 x 8		63	3 x 6	
6	4 x 7		35	11 x 7		64	4 x 10	
7	9 X 2		36	10 x 1		65	9 x 11	
8	12 x 12		37	10 x 5		66	3 x 12	
9	5 X 9		38	3 x 5		67	3 x 10	
10	7 X 7		39	12 x 11		68	4 X 4	
11	11 x 6		40	6 x 6		69	4 x 9	
12	5 x 11		41	2 x 9		70	4 x 11	
13	4 x 6		42	12 x 7		71	6 x 5	
14	9 x 5		43	11 x 8		72	7 x 2	
15	8 X 12		44	2 x 6		73	5 x 12	
16	10 x 10		45	4 x 5		74	2 x 10	
17	7 x 3		46	4 x 9		75	4 x 12	
18	5 x 8		47	8 x 2		76	7 x 8	
19	3 x 3		48	7 x 9		77	6 x 10	
20	10 x 11		49	12 x 8		78	12 x 6	
21	11 x 2		50	9 X 4		79	7 x 12	
22	2 x 7		51	5 X 5		80	2 X 2	
23	6 x 12		52	10 x 12		81	11 x 0	
24	5 x 7		53	8 x 11		82	2 x 12	
25	10 x 6		54	4 x 3		83	2 X 4	
26	9 x 12		55	2 x 5		84	8 x 5	
27	5 x 4		56	5 x 10		85	7 x 11	
28	11 x 11		57	9 x 3		86	9 x 6	
29	7 x 4		58	8 x 10		87	10 x 11	

Date	
Subject/s	Maths
Learning Objective 	To investigate with pentominoes.

# What are pentominoes?

Pentominoes are shapes made by joining 5 squares together.

Squares must touch along their sides, not their corners, like these:

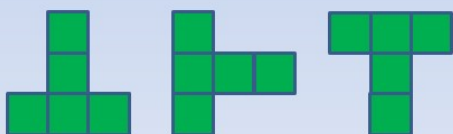


## Challenge 1

There are 12 different pentominoes to find - you have already seen 2 of them.

Be careful though - rotations and reflections do not count.

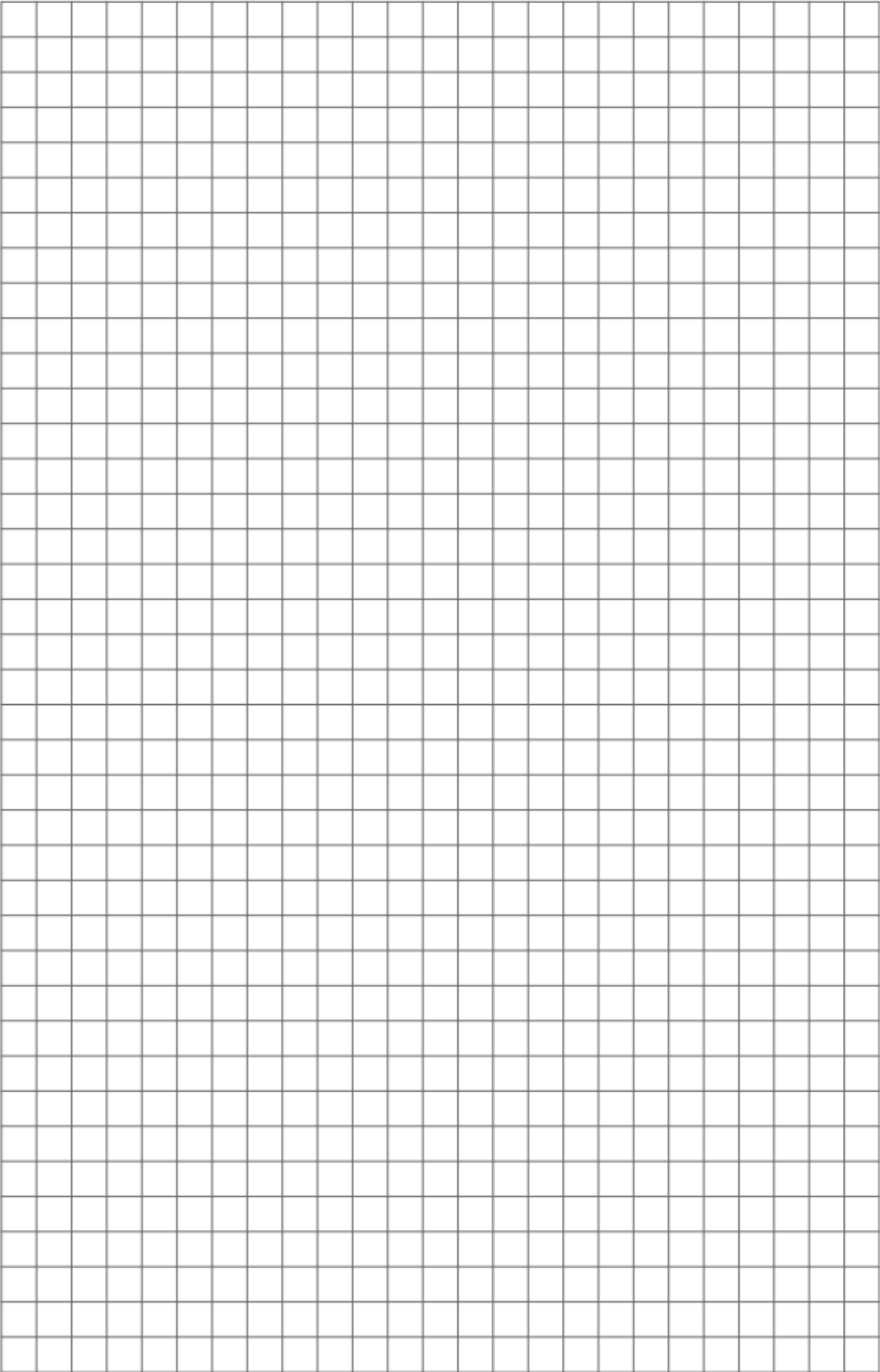
For example:



These are all the same pentomino!

Working on your own or with a partner see if you can make all 12 pentominoes.

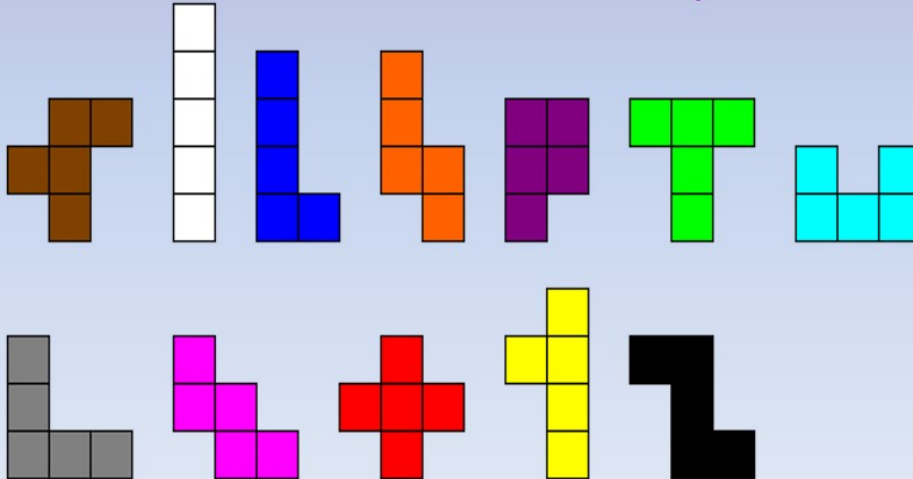
Choosing a different colour for each pentomino will make it easier for you to spot the different combinations.



# Challenge 1

Did you manage to find all 12?

You can check now. Here they are:



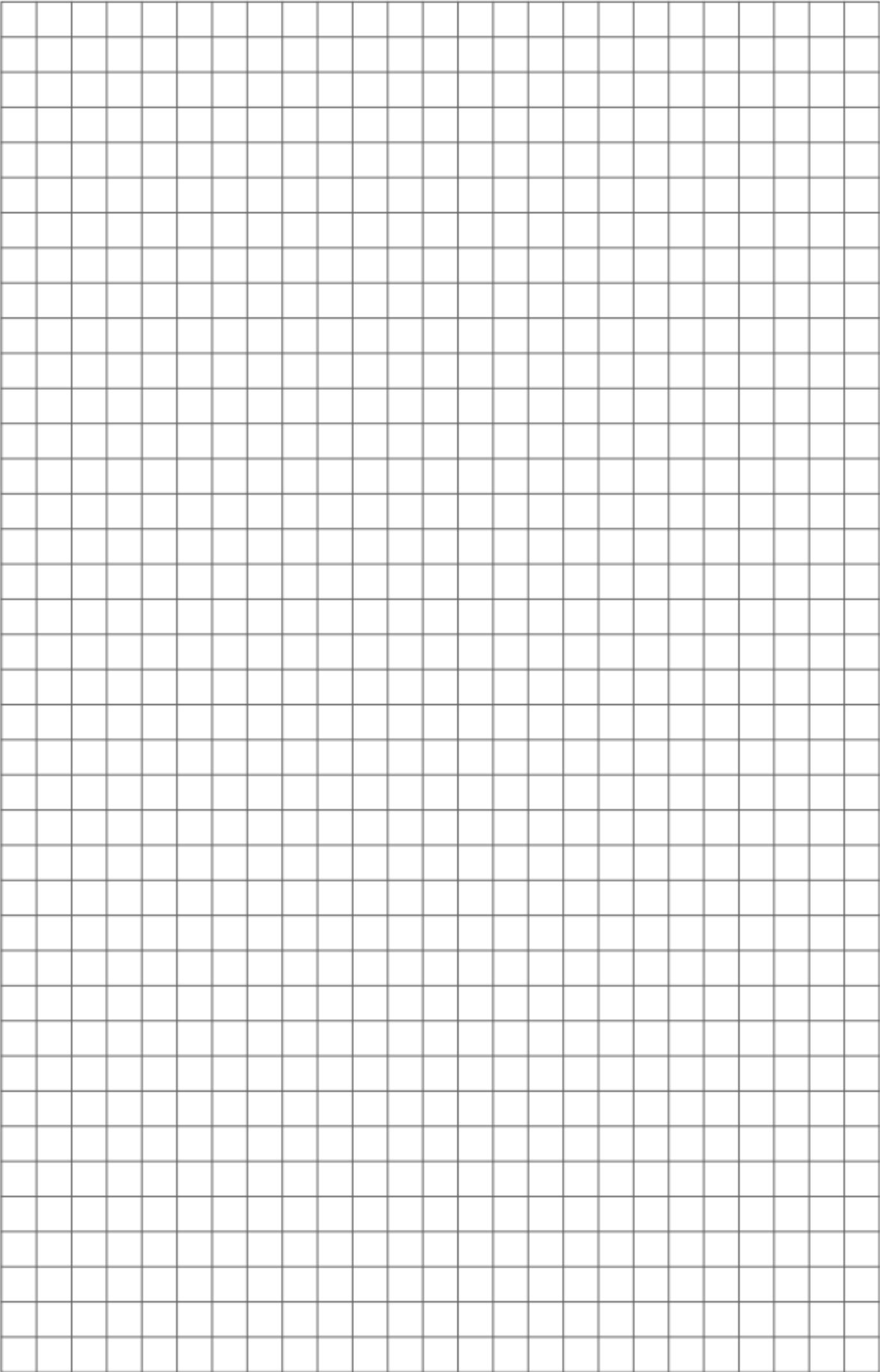
# Challenge 2

Now that you have all 12 pentominoes (hopefully!), you are ready for the next challenge.

Using your 12 pentominoes, see if you can combine them to make a rectangle/cuboid.

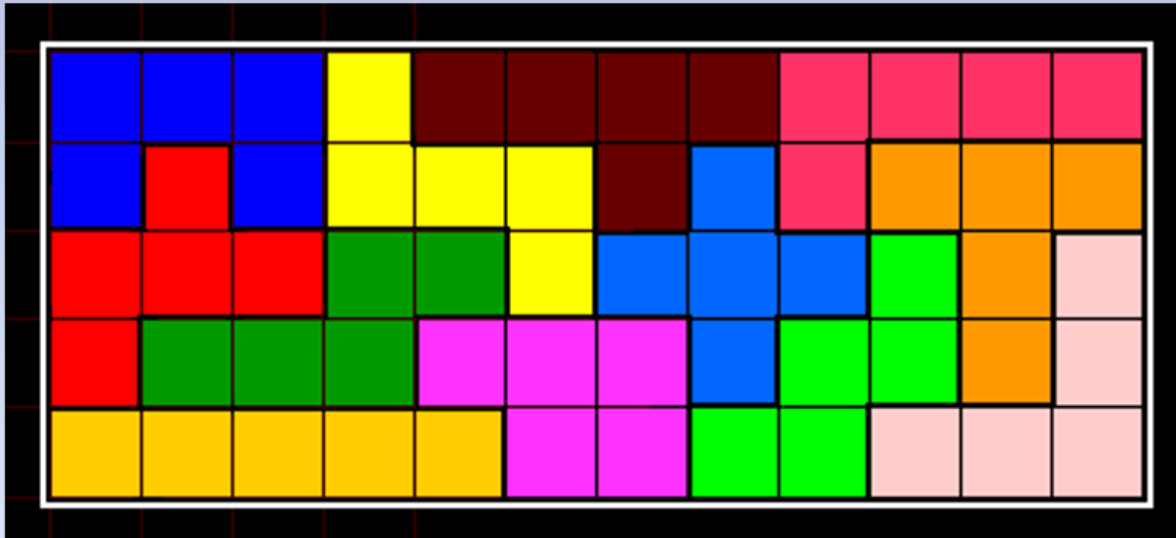
It should be possible to make at least 4 different sizes of rectangles/cuboids.

- There should not be any gaps in your shape.
- There should not be any overlapping squares/cubes.
- There should not be any squares/cubes sticking out from the shape.
- You must use all 12 pentominoes.



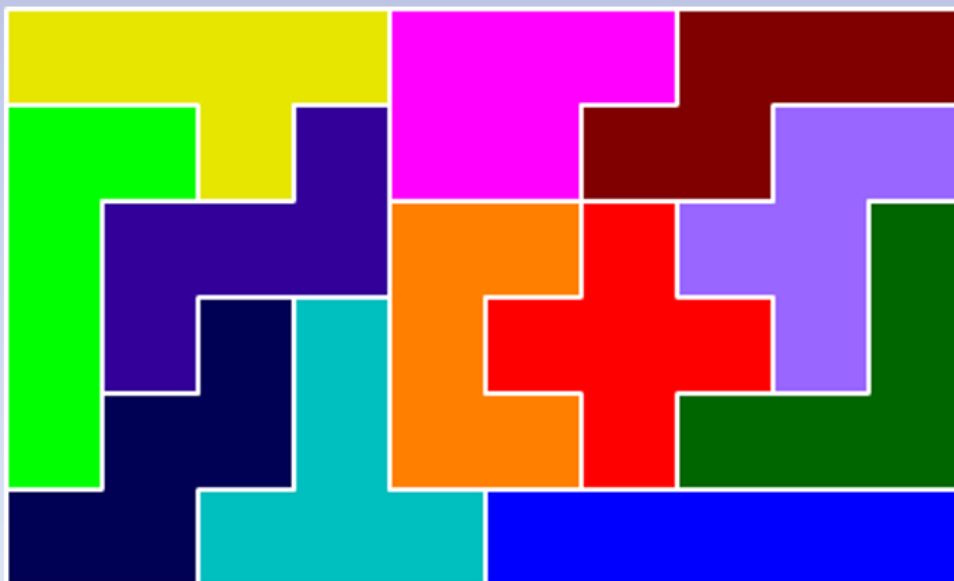
## Challenge 2


One solution for a 5x12 rectangle  
(5x12x1 cuboid)



## Challenge 2



One solution for a 6x10 rectangle  
(6x10x1 cuboid)



Date	
Subject/s	Maths
Learning Objective 	To recall and use multiplication and division facts

$2 \times 2 =$	$3 \times 3 =$	$4 \times 4 =$	$11 \times 10 =$
$3 \times 5 =$	$6 \times 8 =$	$7 \times 5 =$	$10 \times 2 =$
$4 \times 6 =$	$12 \times 5 =$	$8 \times 12 =$	$3 \times 12 =$
$7 \times 4 =$	$8 \times 6 =$	$10 \times 11 =$	$4 \times 9 =$
$10 \times 10 =$	$10 \times 12 =$	$4 \times 2 =$	$5 \times 7 =$
$9 \times 3 =$	$11 \times 2 =$	$10 \times 3 =$	$9 \times 8 =$
$7 \times 2 =$	$3 \times 9 =$	$6 \times 8 =$	$10 \times 7 =$
$11 \times 3 =$	$4 \times 11 =$	$12 \times 10 =$	$7 \times 8 =$
$10 \times 5 =$	$2 \times 5 =$	$2 \times 11 =$	$4 \times 3 =$
$2 \times 4 =$	$6 \times 10 =$	$8 \times 3 =$	$12 \times 4 =$
$5 \times 6 =$	$10 \times 9 =$	$3 \times 4 =$	$5 \times 8 =$
$7 \times 10 =$	$2 \times 12 =$	$4 \times 5 =$	$8 \times 8 =$
$9 \times 2 =$	$5 \times 3 =$	$7 \times 8 =$	$12 \times 2 =$
$3 \times 11 =$	$9 \times 4 =$	$8 \times 10 =$	$5 \times 4 =$
$10 \times 4 =$	$5 \times 5 =$	$2 \times 8 =$	$9 \times 5 =$
$8 \times 5 =$	$8 \times 8 =$	$8 \times 0 =$	$8 \times 11 =$
$9 \times 8 =$	$9 \times 10 =$	$4 \times 12 =$	$2 \times 10 =$
$4 \times 10 =$	$5 \times 2 =$	$12 \times 8 =$	$4 \times 7 =$
$3 \times 2 =$	$6 \times 3 =$	$3 \times 6 =$	$11 \times 5 =$
$7 \times 3 =$	$6 \times 4 =$	$5 \times 10 =$	$2 \times 3 =$
$4 \times 8 =$	$5 \times 11 =$	$8 \times 2 =$	$8 \times 9 =$
$5 \times 9 =$	$2 \times 6 =$	$3 \times 7 =$	$8 \times 4 =$
$12 \times 8 =$	$3 \times 10 =$	$11 \times 4 =$	$11 \times 8 =$
$2 \times 9 =$	$2 \times 7 =$	$5 \times 12 =$	$12 \times 3 =$
$10 \times 8 =$	$3 \times 8 =$	$0 \times 4 =$	$8 \times 7 =$



Date	
Subject/s	Maths
Learning Objective  	To apply and use the four operations (8)

1

$$175 \div 7 =$$

1 mark

4

$$4.2 - 0.6 =$$

1 mark

2

$$\square = 1098 - 100$$

1 mark

5

$$6 \times 12 =$$

1 mark

3

$$224 \times 3 =$$

1 mark

6

$$2779 + 462 =$$

7

$$4 - 0.12 =$$



1 mark

10

$$901 \div 1 =$$



1 mark

8

$$597 + 5 =$$



1 mark

11

$$5.021 \times 100 =$$



1 mark

9

$$\frac{5}{8} + \frac{7}{8} =$$



1 mark

12

$$8^2 + 6^2 =$$



1 mark

13

$$\frac{3}{10} - \frac{1}{10} =$$

1 mark

14

=  $8925 - 4626$

1 mark

15

$$3883 + 7492 =$$

1 mark

16

$$630 \div 7 =$$

1 mark

17

$$67.3 \times 100 =$$

1 mark

18

$$9600 \div 12 =$$

1 mark

19	60 000 - 9000 =
----	-----------------

A blank 10x10 grid for drawing a rectangle. The grid is composed of 10 columns and 10 rows of squares.

1 mark

$$22 \quad 4590 \div 5 =$$

[illegible]

1 mark

20	20% of 2300 =
----	---------------

A 10x10 grid is shown. A rectangle is drawn on the grid, starting from the bottom-left corner. The rectangle is 4 units wide and 6 units high, covering the area from (0,0) to (4,6) in a coordinate system where (0,0) is the bottom-left corner.

1 mark

23	$17 - 8.24 =$
----	---------------

A large grid of squares, 10 units wide and 20 units high, intended for drawing a 3D object. A small rectangular box is drawn in the bottom-left corner, spanning 2 units in width and 4 units in height.

1 mar

$$21 \quad 3.005 \times 6 =$$

A 10x10 grid is shown. A rectangle is drawn on the grid, starting from the bottom-left corner. The rectangle is 4 units wide and 6 units high, covering the area from (0,0) to (4,6) in a 0-indexed coordinate system where (0,0) is the bottom-left corner.

1 mark

24 492 441 - 74 917 =

A large grid of 20 columns and 30 rows, with a shaded header row at the top. A small rectangle is drawn in the bottom-left corner, spanning 3 columns and 4 rows.

1 mark

25

$$\frac{1}{4} \times \frac{1}{5} =$$

1 mark

26

$$72 \times 29 =$$

	7	2
x	2	9

2 marks

27

$$45\% \text{ of } 360 =$$

1 mark

28

$$5784 \div 12 =$$

1	2	5	7	8	4
---	---	---	---	---	---

2 marks



$$\frac{34}{\frac{7}{8} - \frac{3}{4}} =$$

[illegible]

$$\frac{1}{3} \div 4 =$$

36

$\frac{1}{3} \div 4 =$

1 mark

$$35 \quad 3108 \div 74 =$$

# 35

## 3108 ÷ 74 =

7	4	3	1	0	8
---	---	---	---	---	---

2 marks

## Answers

question	answer	marks
1	25	1
2	998	1
3	672	1
4	3.6	1
5	72	1
6	3241	1
7	3.88	1
8	602	1
9	$\frac{12}{8}$ or $\frac{3}{2}$ or $1\frac{4}{8}$ or $1\frac{1}{2}$	1
10	901	1
11	502.1	1
12	100	1
13	$\frac{2}{10}$ or $\frac{1}{5}$	1
14	4299	1
15	11 375	1
16	90	1
17	6730	1
18	800	1
19	51 000	1
20	460	1
21	18.03	1

question	answer	marks
22	918	1
23	8.76	1
24	417 524	1
25	$\frac{1}{20}$	1
26	2088	2
27	162	1
28	482	2
29	44	1
30	4	1
31	$2\frac{1}{6}$	1
32	$\frac{1}{5}$	1
33	136 948	2
34	$\frac{1}{8}$	1
35	42	2
36	$\frac{1}{12}$	1
		Total 40