Maths this Week

Maths this week is to try and get you thinking.

In the middle of each card is a problem in its simplest form and more complicated questions around the outside.

Once you have completed the simplest question, have a go at the questions around the outside. When you are answering the other questions, think about how the questions have changed and what that has made you have to do differently.

CARD 1

Ibrahim watches TV for 35 minutes.

How many seconds did the programme last for?

Ibrahim's two favourite TV programmes last for 3,600 seconds including breaks for advertisements. One programme lasts twice as long as the other. Advertisements last for 720 seconds. How many minutes does each programme last?

What if...

...the amount of time Ibrahim has to watch TV changes.

Ibrahim's two favourite TV programmes last for 25 mins and 15 mins. His mum has recorded 5 episodes of each. Ibrahim only has 1 hour to watch TV. How many different combinations of the two programmes could he watch?

Ibrahim watches TV for 35 minutes. How many seconds did the programme last for? Before the next programme the advertisements lasted for a $\frac{1}{10}$ of an hour. If Ibrahim watched the advertisements as well how many seconds did he watch TV in total?

Ibrahim watches TV for 35 minutes. Before the next programme the advertisements lasted for $\frac{1}{10}$ of an hour. If Ibrahim watched the advertisements as well how many seconds did he watch TV in total?

Ibrahim only has 1 hour to watch TV. The first TV programme lasts for 25 mins with 420 seconds of advertisements at the end. Does he have enough time to watch the next programme that lasts for 30 mins? Explain how you know.

What if...

Less straight forward

Finding all possibilities

Explain

Instructions left out

More steps

Simple

Measurement: time minutes/ seconds
Fractions x ÷ + −

tts

MA03177

3600 seconds = 1hr			
720 seconds = 12 mins	48 mins		
	16 mins	16 mins	16 mins
	Prog. 1 32 mins		Prog. 2 16 mins

One possible approach...

How does this alter the possible combinations of his favourite TV programmes that he could watch in the Red Challenge?

35 x 60 = 2100 seconds.

2 x 25 min prog.
or
1 x 25 min prog. + 2 x 15 min prog.
or
4 x 15 min prog.

3 possibilities.

35 x 60 = 2100 seconds.

$\frac{1}{10}$ of 1 hour = 6 minutes/360 seconds.

2100 + 360 = 2460 seconds in total.

35 x 60 = 2100 seconds.

$\frac{1}{10}$ of 1 hour = 6 minutes/360 seconds.

2100 + 360 = 2460 seconds in total.

No.

420 seconds = 7 minutes.

There is only 5 minutes available for the advertisements if there is to be enough time left to watch the next programme.

CARD 2

Jenna threw her javelin 4.67 metres.
This was 50cms further than her first throw.

How far did she throw her javelin in total after the first two throws, in metres?

The total of Jenna's javelin throws was 7000cms.
Her first throw was 1500cms.
Her next 5 throws were exactly the same distance.
How far did she throw her javelin after her first go, in metres?

What if...

...the javelin was thrown an additional $\frac{1}{10}$ of the original distance.

Jenna was given a target of 22m in total to throw the javelin with 4 attempts.
She never threw the javelin less than 4m
How far might she have thrown each javelin in whole metres to exactly reach her target?

Jenna threw her javelin 4.67 metres.
This was 50cms further than her first throw.
How far did she throw her javelin in total after the first two throws, in metres?
After her third throw she had thrown the javelin a total of 12 metres.
How far did she throw her third javelin?

Jenna threw her javelin 4.67 metres.
This was 50cms further than her first throw.
After her third throw she had thrown the javelin a total of 12 metres.
How far did she throw her third javelin?

Jenna threw her final javelin 9.3m.
Her friend Gemma said she had thrown her javelin a further 91cms at 839cms
Is she correct?
Explain how you know.

What if...

Less straight forward

Finding all possibilities

Explain

Instructions left out

More steps

Simple

Measurement: length m/cms decimals + – ÷

MA03177

7000 – 1500 = 5500cms

5500 ÷ 5 = 1100cms

1100cms = 11m

One possible approach...

How does this alter the distances the javelin was thrown in the Yellow challenge?

Throw 1	Throw 2	Throw 3	Throw 4
4m	4m	4m	10m
4m	4m	5m	9m
4m	4m	6m	8m
4m	4m	7m	7m
4m	5m	5m	8m
4m	5m	6m	7m

etc.

4.67m – 50cms
467cms – 50cms
= 417cm
467cms + 417cms
= 884cms
884cms = 8.84m

4.67m – 50cms

467cms – 50cms = 417cm

467cms + 417cms = 884cms

884cms = 8.84m

12m – 8.84m = 3.16m

4.67m – 50cms

467cms – 50cms = 417cm

467cms + 417cms = 884cms

884cms = 8.84m

12m – 8.84m = 3.16m

Gemma is not correct.

9.3m = 930cms which is 91cms more than 839cms.

CARD 3

The local Scouts were planning a camping trip. In total there were 35 tents available each of which could sleep 7 children.

How many Scouts could go on the trip?

215 of the children on the trip like sausages.
Each child has 2 sausages for breakfast every morning for three days.
The sausages are bought in boxes which hold 50.
How many boxes of sausages will be needed?

What if...

...the number and size of tents changed?

Some tents hold 3 adults and some hold 4 adults.
There are 23 adults altogether.
What combination of tents could they have?
No more than one spare space in just one of the tents is allowed.

The local Scouts were planning a camping trip. In total there were 35 tents available each of which could sleep 7 children.
How many Scouts could go on the trip?
Seven more tents which hold 4 adults each will also be needed.
How many people in total will be going on the trip?

The local Scouts were planning a camping trip.
In total there were 35 tents available each of which could sleep 7 children.
Seven more tents which hold 4 adults each will also be needed.
How many people in total will be going on the trip?

Freddie says that if they had 20 tents that were big enough for 7 children in each one that they would have enough for 200 children.
Is Freddie correct?
Explain how you know.

What if...
Less straight forward
Finding all possibilities
Explain
Instructions left out
More steps
Simple
Short x + PV

tts

MA03177

215 x 2 = 430
430 x 3 = 1290

or

215 x 2 x 3 = 215 x 6 = 1290
1290 sausages in boxes of 50
26 boxes will be needed.

One possible approach...

In the Green Challenge the number of tents tripled but they were only big enough for 3 children.
How does this affect how many children can go on the trip?

4 man tent	3 man tent	Spare places
6	0	0
0	8	1
3	4	1
5	1	0
2	5	0

35 x 7 = 245 scouts.

35 x 7 = 245 scouts.

245 + 28 = 273 people.

35 x 7 = 245 scouts.

245 + 28 = 273 people.

Freddie is not correct.

20 tents for 200 children would be
10 children in each tent when they only hold 7.

There are not enough tents for
200 children.

CARD 4

Imogen, Pippa and Dexter are playing a computer game.
Their scores are:
Imogen 1092 points
Pippa 2139 points
Dexter 3781 points.
What is the total of all three scores?

The 4 friends in their second game score a total of 8000 points.
Three of the children score exactly 1363 points each.
What does the fourth friend score?

What if...

...the points awarded during a game or the number of children playing changed?

In total 6180 points are scored.
Three children are playing and each scores a minimum of 2000 points.
The remaining points are awarded as multiples of 5.
What possible combinations of scores could there be?

Imogen, Pippa and Dexter are playing a computer game.
Their scores are:
Imogen 1092 points Pippa 2139 points
Dexter 3781 points.
What is the total of all three scores?
Their friend Bobby joins in and scores 254 more points than Imogen.
What is the number of points scored in total for all 4 friends?

Imogen, Pippa and Dexter are playing a computer game.
Their scores are:
Imogen 1092 points
Pippa 2139 points
Dexter 3781 points.
Their friend Bobby joins in and scores 254 more points than Imogen.
What is the number of points scored in total for all 4 friends?

Imogen scored 1092 points.
Imogen says she only needs to score another 157 to take her score up to $\frac{1}{4}$ of 5000.
Is she correct?
Explain how you know.

What if...
Less straight forward
Finding all possibilities
Explain
Instructions left out
More steps
Simple
+ and – 4 digit numbers PV fractions

tts

1363 x 3 = 4089

8000 – 4089 = 3911 points.

One possible approach...

In the Red Challenge the remaining points were awarded in multiples of 9.
How would this affect the number of combinations of scores there could be?

e.g.

1	2	3
2000	2000	2180
2000	2045	2135
2000	2090	2090
2000	2135	2045
2000	2180	2000
2045	2000	2180

etc.

1092 + 2139 + 3781 = 7012

1092 + 2139 + 3781 = 7012

1092 + 254 = 1346

1346 + 7012 = 8358

1092 + 2139 + 3781 = 7012

1092 + 254 = 1346

1346 + 7012 = 8358

$\frac{1}{4}$ of 5000 = 1250

The ones/units in her score and what she says she needs do not add up to a multiple of 10 so she cannot be correct.

CARD 5

The temperature in Paris in January can fall to -2°C and in June it can rise to 25°C.
What could the difference in temperature be from January to June?

The temperature over three days in July in Paris totalled 74°C.
On one of the days it was 8°C warmer than on the other two days when the temperature stayed the same.
What was the temperature on each of the days?

What if...

...the temperature in January fell further below freezing over a number of consecutive days?

During a week in July in Paris the temperature over three consecutive days never fell below 25°C.
The combined temperature for the three days was 80°C.
What could the temperature have been for each of the three days?

The temperature in Paris in January can fall to -2°C and in June it can rise to 25°C.
What could the difference in temperature be from January to June?
In July the temperature could rise by another 6°C.
What could the difference in temperature be then?

The temperature in Paris in January can fall to -2°C and in June it can rise to 25°C.
In July the temperature could rise by another 6°C.
What could be the difference in temperature from January to July?

Pierre says that the temperature in Paris in January is never below freezing.
Is this true?
Explain how you know.

What if...
Less straight forward
Finding all possibilities
Explain
Instructions left out
More steps
Simple
Measurement: temperature + & – -ve numbers

MA03177

74°C – 8°C = 66°C
66 ÷ 3 = 22

Day 1	Day 2	Day 3
22°C	22°C	22°C + 8°C = 30°C

One possible approach...

The temperature in January over 3 days fell another 3 degrees each day. What would the new temperatures be and how much would the temperature have to rise to reach the June temperature of 25°C?

e.g.

Day 1	Day 2	Day 3
25°C	25°C	30°C
25°C	26°C	29°C
25°C	27°C	28°C
25°C	28°C	27°C
25°C	27°C	26°C
25°C	30°C	25°C
26°C	25°C	29°C
26°C	26°C	28°C

etc.

The difference in temperature is 27°C.

27°C + 6°C = a difference of 33°C.

27°C + 6°C = a difference of 33°C.

Water freezes at Zero degrees = 0°C.

-2°C is 2 degrees less than zero so it isn't true.