Extra Math Challenges

These challenges are completely optional to complete but have been put on here just in case you want some trickier problems to solve. There are a mix of questions, spanning across the different units we have looked at so far in our maths. Good luck!

1) Ian needs to collect 1,000 gold coins in order to leave the maze. If he starts with 200 gold coins, explore the different routes that Ian can take to reach his target.
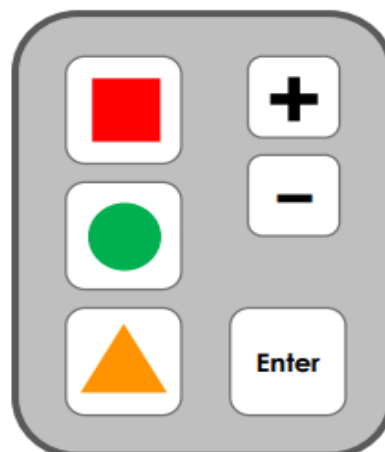

2) Nicole is trying to solve an alien code to enter the spaceship. First, she has to work out the value of each symbol using the grid below.

Nicole knows that the alien code totals 700 and uses between 2 and 5 symbols. Using the keypad, what could the combination of symbols be?

3) Explore the value of each flower to complete the statements and key below. (You may need to do some trial and error to work out some of the flowers)

$$\frac{\text{(blue flower)}}{7} + \frac{\text{(pink lily)}}{7} + \frac{\text{(pink lily)}}{7} = \frac{7}{7}$$

$$\frac{\text{(sunflower/red star)}}{} + \frac{\text{(pink lily)}}{8} + \frac{4}{8} = \frac{\text{(red star)}}{\text{(red star)}}$$

$$\frac{\text{(yellow/red flower)}}{} + \frac{\text{(yellow/red flower)}}{} + \frac{\text{(yellow/red flower)}}{} = \frac{\text{(yellow/red flower)}}{}$$

Key:

Flower		Value
(blue flower)	=	☐
(pink lily)	=	☐
(red star)	=	☐
(yellow flower)	=	☐
(red flower)	=	☐

4) Ebony asked some people at her school about their favourite weather type as part of her geography project. She needs your help to fill in the results on the table below

	☔	☀	🌪	❄	⚡	☁	Total
Pupils		(splat)	4			(splat)	
Teaching staff	(splat)	19			2	(splat)	(splat)
Kitchen staff	5	(splat)		1	0	(splat)	14
Cleaning staff		(splat)	1			4	

Ebony says,

- All the splats are hiding odd numbers.
- In total, I collected an odd number of votes which reads the same backwards and forwards.
- Overall, the most popular weather type was snow with more than 45 votes but less than 55 votes.
- The total amount of pupils and cleaning staff that voted are both multiples of 10.

Use Ebony's clues to complete the table above. (There are multiple answers that you could come up with – I've included a possible answer to this question at the bottom of the document)

5) Sanjay has created the table below to show people's favourite smoothie flavours, but he can't remember the order of the flavours.

								Total
5 – 12 year olds	13	2	10	9	🔘	16	15	🟢
13 – 17 year olds	🟡	7	29	0	16	4	3	61
Adults	20	13	5	🔴	2	15	0	🔵

Choose seven flavours from above and place them in columns of your choice. Then, create 3 questions for your partner to solve. An example of a question is shown below.

> Overall, how much more popular was the apple smoothie than the peach and carrot smoothies combined?

6) Match the fractions to the correct image. You may wish to cut out the triangles and do this physically.

eight tenths

seven eighths

one sixth

three quarters

four tenths

six ninths

one fifth

three eighths

two quarters

five twelfths

one half

7) Anya begins the seaside maze with three £5 notes, one £2 coin, one £1 coin, four 10p coins, one 5p coin and two 1p coins. Each time she moves, she subtracts the total amount shown on each rectangle. When she reaches 'Finish', she has between £7 and 63p and 894p left. Along the way, Anya travels diagonally at least twice.

🪣	£2 and 45p	eight 2p coins three 50p coins	one 2p coin eight 50p coins five 5p coins	FINISH
£3 and 74p ⭐	£3 and 81p	£2 and 27p 🍦	£2 and 59p	£1 and 66p
START	187p	🏰	214p	🪏
seven 20p coins one £2 coin five 1p coins	🪏	one 20p coin two £2 coins nine 10p coins	£1 and 21p	three 5p coins four 1p coins twelve 10p coins

Investigate possible routes that Anya may have taken.

8) Jane asks Mum for help with her homework. She has a column addition calculation with some missing digits. She shows Mum these rules:
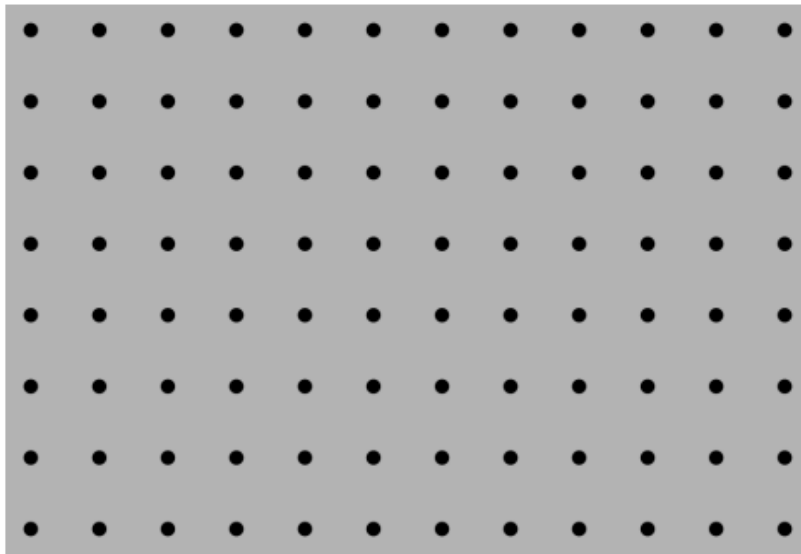
- Each empty square must contain a different digit.
- The calculation must include at least one exchange.
- The answer has an odd digit sum.
- In the answer, one of the missing digits is half the value of the hundreds digit.

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   3 □ 7
 +   □ □ □
 ─────────
   8 ▨ ▨
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0 1 2 3 4 5 6 7 8 9

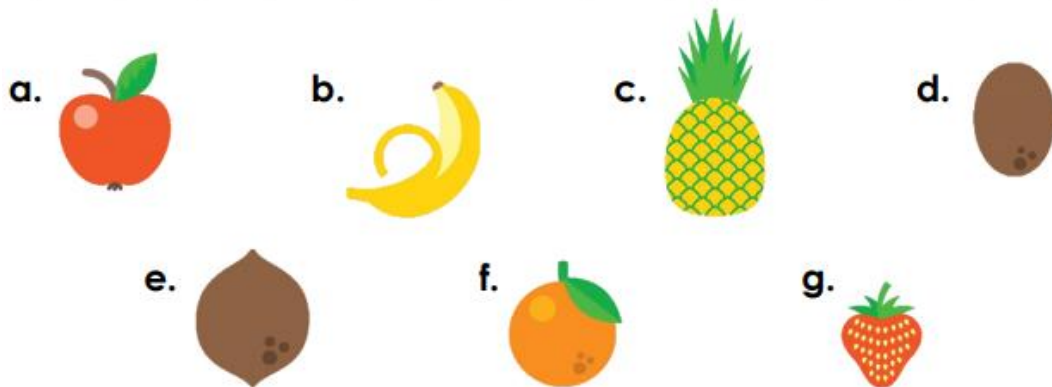Find all of the missing digits. Is there more than one possible answer?

9) Design a shape on the peg board using the rules below.

Rules
The shape has 3 right angles and more than 6 sides.
The shape includes diagonal lines.

10) Write the names of the fruits below using the capital letters provided.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

a.   b.   c.   d.

e.   f.   g.

Investigate which fruit has the most right angles within its name and then order them.

Possible answer to question 4:

	🌧️	☀️	🌪️	🌨️	⛈️	☁️	Total
Pupils	10	(21)	4	46	8	(1)	90
Teaching staff	(1)	19	0	6	2	(9)	(37)
Kitchen staff	5	(5)	0	1	0	(3)	14
Cleaning staff	2	(3)	1	0	0	4	10
	18	48	5	53	10	17	151

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