

Year 5s: At the beginning of the school year (back in year 2050), we went on a mission to space. You are now getting sent on another mission. Unfortunately, you do not have your team with you on this mission, so it is up to you! Use your place value knowledge to help you. If you are really stuck, use the clue page at the bottom of the document (only use it if you need it!) and the answers are provided at the end. Best of luck and have fun!

Congratulations! You have been selected from the hundreds of applications to lead the exciting new mission to find a galaxy far away.

From: Mr Armstrong(space-discovery.org.uk)
Sent: 03 December 2050 12:57:12
Subject: Exciting Mission



Dear Captain Smith

I have looked at your career so far and the space missions you have been involved in and I am pleased to tell you that you have been selected to lead a new mission to find a galaxy far away. The mission leaves as soon as all crew have arrived!

You have reached Space Discovery Headquarters and as captain of the mission it is time to put your crew together. The optimum age for an astronaut is 25 to 35.

Complete the table below to find out which astronauts would fit into this category (You might want to check the date on the e-mail). Use the example below to correctly format your answers.

1.	Date of Birth	Clue	Age
Astronaut 1	__ / __ / __	80 thousands, 9 hundreds and 31 ones	
Astronaut 2	__ / __ / __	90 thousands, 1 thousand, 1 hundred and 23 ones	
Astronaut 3	__ / __ / __	10 thousands, 817 ones	
Astronaut 4	__ / __ / __	61 thousands, 2 tens and 7 ones	
Astronaut 5	__ / __ / __	70 thousands, 72 tens and 0 ones	
Astronaut 6	__ / __ / __	30 thousands, 9 hundreds, 2 tens and 2 ones	
You	01/06/16	10 thousands, 6 hundreds and 16 ones	34

Which astronauts would fit the age range?

Now you have identified some possible crew members for your mission, you need to think about weight.

The shuttle has a maximum load of 3 people with a maximum weight capacity of 275,000g. It will be a long mission so you need to allow for the weight of astronauts to fluctuate. They could lose up to 10,000g or gain 1,000g.

2.

Item	Loss	Current weight (g)	Gain
Astronaut 1		82,553	
Astronaut 2		105,346	
Astronaut 3		78,436	
Astronaut 4		99,815	
Astronaut 5		134,432	
Astronaut 6		112,567	
You		84,887	

Using ALL the information you have, which 2 astronauts will you take with you?

Brilliant! Now you have the crew identified, it's time to pack the shuttle. As always with these missions, weight is very important.

3. Items have been rounded to the nearest 100g and 1000g. What could be the actual weight of the item?

	Actual weight of water	Rounded to the nearest 100g	Rounded to the nearest 1,000g
		8,100g	8,000g

	Actual weight of food	Rounded to the nearest 100g	Rounded to the nearest 1,000g
		10,300g	10,000g

	Actual weight of rucksacks	Rounded to the nearest 100g	Rounded to the nearest 1,000g
		15,700g	16,000g

	Actual weight of toolkit	Rounded to the nearest 100g	Rounded to the nearest 1,000g
		3,200g	3,000g



At last, everything is ready and it's launch day.

10... 9... 8... 7... 6... 5... 4... 3... 2... 1... Take off!!!

You are now leading the mission to discover new planets in a galaxy far away.

It isn't long before Astronaut 2 spots something to the port side on the radar and you move the shuttle towards the mass. It looks like a planet so you instruct your crew to start taking readings...



Name: Planet 1
Distance from Earth: 123,682 km
Temperature: 260°C

Great find crew! Let's change direction and see if we can find any further planets. Just as the crew were going to give up for the night a small spec appeared on the radar once again. You move the shuttle towards the mass and find another planet.



Name: Planet 2
Distance from Earth: 196,211 km
Temperature: 35°C

After a very long day and readings for two new planets, it's time to get some sleep. Oh no! The rucksacks are locked and the codes are back at base. Solve the clues from what the astronauts remember to help the crew unlock their padlocks

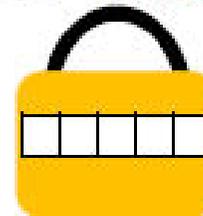
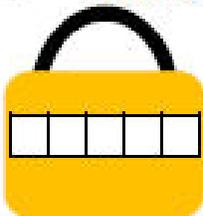
4.

My code had a 5 in the tens column

My code was the greatest number

My code's digits added up to 16

Captain Smith Astronaut 2 Astronaut 3



DLXII

DLVII

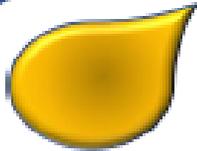
CDXVI

CCXCV

CXLIX

Thank goodness, sleep at last! You and Astronaut 2 climb into your bunks for some well earned rest whilst Astronaut 3 keeps watch.

BUMP..... a meteoroid hits the shuttle and you are suddenly awoken. It feels like minutes, although hours have passed as Astronaut 2 is now on watch. He tells you that he has seen another mass on the radar and you join him as you steer towards it.



Name: Planet 3
Distance from Earth: 57,934 km
Temperature: 4°C

Another new planet! What a busy mission! You command the shuttle as Astronaut 2 takes readings.

You get caught in a meteor storm and the shuttle is damaged. You must cut the mission short and return to base for repairs.



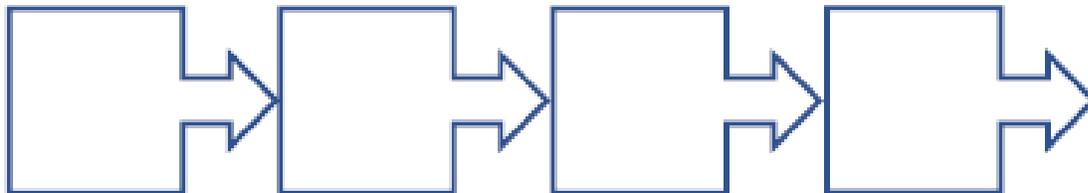
Name: Planet 4
Distance from Earth: 75,206 km
Temperature: 13°C

As the days pass you find another planet before ...



You contact mission control and inform them of your plans. They ask you to return to the galaxy as quickly as the shuttle can be fixed. You start to plan for your return.

5. Plot your route so that you visit the closest planets to Earth first.



You check the forecast for your next mission and there is a drastic temperature drop of 15° expected across the galaxy.

6. What could this mean for the planets you have discovered?

Name: Planet 1
Temp:

Name: Planet 2
Temp:

Name: Planet 3
Temp:

Name: Planet 4
Temp:

Clues:

- Place each of the written numbers provided into a place value chart (or in the blank spaces provided); make sure to include a zero if there is not a number to fill that section of the place value chart. Use the picture below to help you remember the value of each number.

Number	Place Value (of the red digit)	Value of the Digit (of the red digit)
1,23 4	Ones	4
1,2 3 4	Tens	30
1, 2 34	Hundreds	200
1 ,234	Thousands	1,000
7, 8 91,234	Ten Thousands	90,000
7, 8 91,234	Hundred Thousands	800,000

When calculating the age: note the year is 2050. If I was born in 2016 my calculation would be $2050 - 2016 = 34$

- Subtract 10,000 from each number to fill in the loss section. Add 1,000 to each number to fill in the gain section. You must take two astronauts with you. There are multiple astronauts that you can take with you to stay within the weight limit, but you also need to bring astronauts of the right age from question 1. Your options are 2, 3, 5, and 6—which of these fit the weight range?
- If the water weighed 8049g and I rounded to the nearest 100g, I would round down to 8000g, therefore it must be higher than 8049g. If the water weighed 8150g and I rounded to the nearest 100g, I would round up to 8200g, therefore it must be less than 8150g. Any number that is more than 8049 but less than 8150 would be acceptable for the water. Try the next 3 items.
- Use this chart to help you:



ARABIC NUMERAL	ROMAN NUMERAL	ARABIC NUMERAL	ROMAN NUMERAL
1	I	20	XX
2	II	30	XXX
3	III	40	XL
4	IV	50	L
5	V	60	LX
6	VI	70	LXX
7	VII	80	LXXX
8	VIII	90	XC
9	IX	100	C
10	X	500	D
		1000	M

- Organise the following numbers from smallest to highest:

123, 682

196,211

57,934

75,206

6. Take the temperature at each planet and subtract 15 degrees.

Answers

THREE YEAR COMBINATION TEST

1.

Planet	Date of Birth	Clue	Age
Astronaut 1	08/09/31	80 thousands, 9 hundreds and 31 ones	19
Astronaut 2	09/11/23	90 thousands, 1 thousand, 1 hundred and 23 ones	27
Astronaut 3	01/08/17	10 thousands, 817 ones	33
Astronaut 4	06/10/27	61 thousands, 2 tens and 7 ones	23
Astronaut 5	07/07/20	70 thousands, 72 tens and 0 ones	30
Astronaut 6	03/09/22	30 thousands, 9 hundreds, 2 tens and 2 ones	28

Astronauts 2, 3, 5 and 6 fit the age range.

2.

Item	Loss	Current weight (g)	Gain
Astronaut 1	72,553	82,553	83,553
Astronaut 2	95,346	105,346	106,346
Astronaut 3	68,436	78,436	79,436
Astronaut 4	89,815	99,815	100,815
Astronaut 5	124,432	134,432	135,432
Astronaut 6	102,567	112,567	113,567
You	74,887	84,887	85,887

Astronauts 2 and 3 need to be chosen to be both in the age range and crew weight limit.

3. Water – number between 8,050g and 8,149g
 Rucksacks - number between 15,650g and 15,749g
 Food - number between 10,250g and 10,349g
 Tools - number between 3,150g and 3,249g

4.

DLXII	DLVII	CDXVI	CCXCV	CXLIX
562	557	416	295	149

Captain Smith – DLVII, Astronaut 2 – DLXII, Astronaut 3 - CCXCV

5. Planet 3: 57,934; Planet 4: 75,206; Planet 1: 123,682; Planet 2: 196,211

6.

Name: Planet 1 Temp: 245°	Name: Planet 2 Temp: 20°	Name: Planet 3 Temp: -11°	Name: Planet 4 Temp: -2°
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