Sheet 6,210,404: what will you take with you?

Congratulations! One of you has been selected to be the pilot for the Mars mission to retrieve Mars Bars for desperate, hungry teachers.

TASK 1: What will you take with you?

- The shuttle has space for the pilot only. Together, decide what you will take on the 20 day mission.
- Remember everything costs money, takes up space and will slow the ship down so only take essentials.
- Your ship can handle a maximum of 200 kg in the payload bay.
- You have a budget of £1000.
- Remember to make sure your pilot has everything they need to survive plus extra for any emergencies.

Fill in the table below when you have made your final decisions. Remember – mistakes will cost lives!

• Mass is how much there is of something – in deep space there's no gravity, so there's no weight, but objects still have mass.

Items to choose from:	Cost for each unit:	* Mass (in KG):	How many you will take:	Final weight of this item	Final cost calculation	Notes: amounts to deduct and final figure, showing how much is left
Food	£1.10 per kg	1 unit = 1kg				
Water	£0.75 per l	1 litre = 1kg				
Space suit	£50.00 each	1 suit = 20kg				
Fuel	£22.00 per l	1 l = 2 kg				
2 books & 2 DVDs	£2.50 (box)	5 kg per box				
Shuttle toolkit	£35.00 each	15kg each				
Medical kit	£40.00 each	12kg each				
Calculator	£150.00 each	1kg each				Can be used only once in the mission.
Quick-fix kit	£22.50 each	1.5kg each				
Mars bar holder	£3.75 each	0.75kg each				
			Totals:			

Sheet 6,120,440: miserable failures or brilliant planners?

Pilot's lives: will you survive the mission?

Each team's pilot has 5 lives. Only a well-planned mission will succeed!

You lose a life if you cannot solve a mission problem, or if you run out of **food**, **fuel** or **water**.

Keep track of any lives lost here:

5	4	3	2	1		
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Reason:	Reason:	Reason:	Reason:	Reason:		
Debriefing – next time we go on the mission we need to:						

Sheet 6,120,405: food radiation problem

Find one tent:

- 1) Divide the amount of food you have brought with you by ten.
- 2) To divide by ten:
 - **a**. Write the number with HTU place values.
 - **b**. Slide all the digits one place to the right ONCE.
- 3) Now you have one tenth, subtract it from the amount of food you decided to take with you. Also take off the 6 meals you have already eaten!

You lose a life if:

 \textcircledightarrow You have fewer than 36 meals left. You need at least 2 meals per day. There are 18 days left on the mission. (18 x 2 = 36.)

Total Meals - 6	subtract	One Tenth	Equals	Answer
	_		_	

Sheet code 6,102,440: fire in the galley!

Use 1/4 of your water to put the fire out.

There are many ways to find a quarter – all of them involve sharing into 4.

- 1) Draw four bowls and share equally. How much does each bowl get?
- 2) Find half and then half it again.
- 3) Count in 4s until you reach your target number.

It is day 7 you have already used 7 litres of water.

Subtract that from your starting amount. How much do you have?.....

You used 1/4 to fight the fire. How much was that?.....

Subtract this from your total water.

How much is left?.....

 $\ensuremath{{\otimes}}$ You lose a life if you have less than 13 litres left. You cannot survive on less than 1 litre of water a day. There are still 13 days left on the mission.

Error sheet 6,120,044: life-support failing!

We have **3.27** of gold wire.

Give a third of the wire to M.A.M.A. **in the next 5 minutes**, and she will fix it. Your time starts now!

Find 1/3:

There are many ways to find a one third – all of them involve sharing into 3.

- Convert into cm. Now share out 327 into 3 groups. How many in each group? Convert back into m.
- Convert into cm. Count in 3's until you reach your number.
 Convert back into m.

You lose a life if:

 $\ensuremath{\mathfrak{S}}$ You do not complete the calculation on time.

- But if you have a Quick fix kit, you can use that to get your life back.
- You can only use the QFK once.

1/3 of 3.27 m =

Event sheet: 6,102,404: pilot's birthday!

You have been offered the gift of chocolate.

You can have 1/8 of an 8.96kg bar.

- How much chocolate is that?
- For a bonus life, how much will each of your crew get of the chocolate if you were to share it on your return?

Find 1/8:

To find an eighth, divide by 8.

 If you are working with a decimal, work on the whole number first, then work on the decimal part.

✓ E.g. $16.32 \div 8$... $(16 \div 8 = 2) + (0.32 \div 8 = 0.04) = 2.04$.

(Knowing your times tables will help a lot here.)

1/8 of 8.96 Kg =

Event sheet: 6,102,044: your birthday gift continued ...

So you want M.A.M.A.'s chocolate? Well get working kids! The safe code is made from fractions. These have to be changed to decimals and then added together. The total opens the safe.

By the way, if you get the safe code wrong, the pilot's cabin will be sprayed with poisoned gas and YOU LOSE A LIFE!

Safe codes to change to decimals: [use the calculator if you have packed one]

1/8 + 1/25 + 1/4 + 3/4 + 1/2

Convert fractions to decimals:

Success tips:

- 1) A fraction is really a disguised division calculation. The / means divide.
- 2) Replace the / sign with the division key on the calculator and you will calculate the decimal form of the fraction.

✓ 1/20 is the same as $1 \div 20 = 0.05$

3) Do this for each fraction. Write down each answer. Add the list carefully!

Calculations:

Thief code 6,201,044: burglary alert!

Some greedy thief has stolen 1/8 of M.A.M.A.'s bar of chocolate!

The whole bar cost £32.88. So how much do they owe M.A.M.A.?

Find 1/8:

Use what you have already learned about division and fractions to work out what 1/8 of £32.88 is.

Calculations: 1/8 of £32.88

Error code 6,201,440: asteroid collision!

An asteroid collision has occurred! It's smashed a hole in the ship and now we're spinning out of orbit.

- Sou will die if you did not pack:
 - A space suit and one of either of these: an EVA toolkit or a Quick-Fix
 Kit.
 - You can only use the QFK I hope you've not used it already!

After the repairs are done you notice a computer panel has been damaged.

Complete the codes in these sequences to fix the missing computer coding strips:

0	1⁄2	1	2	21⁄2	

5	5¼	51⁄2	5¾		

See You will lose a life if any are incorrect. Take care!

Sheet 6,201,404: finding the precious Mars Bars.

Write the co-ordinates of each Mars Bar.

The Mars Lander is on the surface.

All mistakes will result in M.A.M.A. pressing the self-destruct button for the mission.



Mars bar co-ordinates:



































MARS MISSION PLANNER M.A.M.A.			Name of Group:						
knows	best		Star Date:	Star Date:					
				How many you will	Final Mass of this				
Items to choose from:	Cost for eac	ch unit:	Mass (in KG):	take:	item	Final cost calculation			
Food (per meal)	£	1.10	1.0		0	£ -			
Drinking water	£	0.75	1.0		0	£			
Space suit	£	50.00	20.0		0	£			
Fuel		£22.00	2.0		0	£			
2 books & 2 DVDs	£	2.50	5.0		0	£			
EVA toolkit	£	35.00	15.0		0	<u> </u>			
Medical kit	£	40.00	12.0		0	<u> </u>			
Calculator	£	150.00	1.0		0	£			
Quick fix kit	£	22.50	1.5		0	- E			
Mars bar holder	£	3.75	0.8		0	£ -			
You have this many KG left:		200 KG		TOTALS:	0 KG	£ -			
You have this much money left:	£ 1,	,000.00			TOTAL MASS	MONEY SPENT			
Food			Water	Fuel	M.A.M.A.'s Mission P	lanner Recommendations			
Look here for help from M.A.M.A \rightarrow	Your pilot will prob of food. Make sur	oably run short e you plan for	Your pilot will probably run short of water. Remember to plan for	Are you sure you have enough fuel? The spaceship uses about 2kg of fuel	You need to fill the ship with more ite all	ems. Try to get closer to your baggage lowance.			
j. e	emergencie	2s too.	emergencies too!	emergencies?	You need to spend more money. Try	, to get closer to spending everything.			