






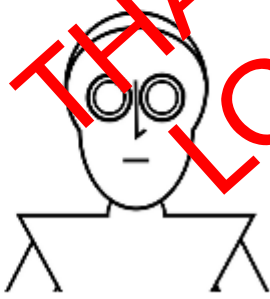


MATH DETECTIVES

CRIME SCENE INVESTIGATION

The fate of the Earth is in your hands. You work for an undercover government agency who keeps track off all the aliens here on Earth. Last night an alien broke into your secret facility and stole the deadly ray gun - this ray gun could destroy the world. Your job is to find out which of the aliens below stole the gun and then stop them before they can use it.

One of the eight aliens below committed the crime and the galactic police need your help to find out who.

THE ALIENS

			
ZOLIR	NORGAL	KLOPF	ARAIMAL
			
LELA	SWAXA	NUKEER	YHOCORH

YOUR TEAM HAS FOUND 4 CLUES WHICH ARE ON THE NEXT PAGES.

AFTER YOU HAVE SOLVED EACH CLUE COME BACK HERE TO CROSS ALIENS OFF THE SUSPECT LIST UNTIL YOU HAVE FOUND THE CRIMINAL

CLUE 1: HIDDEN MESSAGE

An unknown alien rushes into the room waving its arms around. You think it wants to tell you something about the aliens, but the problem is this alien can't speak English, it speaks in a funny math language. To be able to translate the aliens message you will need to first solve the questions it asks you below.

Solve the problems, then fill in the message spaces with the letters that match the correct answers to read the secret message. This will let you cross off two aliens from the suspect list.

A 4X5 _____	B 7X7 _____	C 2X7 _____	D 4X7 _____	E 7X8 _____	F 3x5 _____
G 2X9 _____	H 6X6 _____	I 2X _____	J 4X4 _____	K 3X4 _____	L 3x8 _____
M 6X7 _____	N 5X5 _____	O 3X6 _____	P 9X9 _____	R 4X8 _____	S 9x8 _____
T 9X5 _____	V 7X _____	W 3X9 _____	Y 6x3 _____		

PREVIEW
THANKS FOR
LOOKING!

$$\begin{array}{r} \text{_____} \\ 21 \quad 35 \quad 32 \quad 8 \quad 25 \quad 18 \quad 45 \quad 36 \quad 56 \\ \hline 32 \quad 30 \quad 49 \quad 49 \quad 56 \quad 32 \quad 48 \quad 45 \quad 36 \quad 56 \end{array}$$

$$\begin{array}{r} \text{_____} \\ 20 \quad 24 \quad 8 \quad 56 \quad 25 \quad 72 \quad 14 \quad 20 \quad 24 \quad 24 \quad 56 \quad 21 \end{array}$$

$$\begin{array}{r} \text{_____} \\ 12 \quad 24 \quad 30 \quad 32 \quad 15 \quad 20 \quad 25 \quad 21 \quad 24 \quad 56 \quad 24 \quad 20 \end{array}$$

$$\begin{array}{r} \text{_____} \\ 27 \quad 56 \quad 32 \quad 56 \quad 20 \quad 45 \quad 45 \quad 36 \quad 56 \end{array}$$

$$\begin{array}{r} \text{_____} \\ 72 \quad 81 \quad 20 \quad 14 \quad 56 \quad 16 \quad 20 \quad 42 \quad 81 \quad 20 \quad 32 \quad 45 \quad 48 \end{array}$$

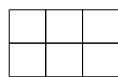
Since these aliens couldn't of committed the robbery, cross them off your suspect list.

CLUE 2: ALIEN SPACE SHIPS

You have confiscated the space-ships of all the aliens. The ray-gun can be broken into parts for easy transport but would still take up a large amount of space. After scanning the ships you can see the amount of room each ship has available for carrying extra cargo. The two ships with the least amount of space wouldn't be big enough to fit the ray gun.

Which two spaceships have the smallest amount of total square area inside?
(TOTAL SQUARE AREA IS ONLY THE WHITE INSIDE PART OF THE SHIPS)

Hint: To calculate area you can either **count the number of squares** in each ship **OR** break the area up into parts and multiple length x width for each part.



e.g. as an area of 6 squares
 $3 \times 2 = 6$
length x (width)

Zoltars Ship Amount of square (a): _____	Norg's Ship Amount of square (a): _____	Korfs Ship Area: _____	Arimals Ship Area: _____

Lelas Ship Area: _____	Swaxas Ship Area: _____	Nukeers Ship Area: _____	Yhocorhs Ship Area: _____

Which 2 alien ships had the smallest area? Cross these aliens off your suspect list

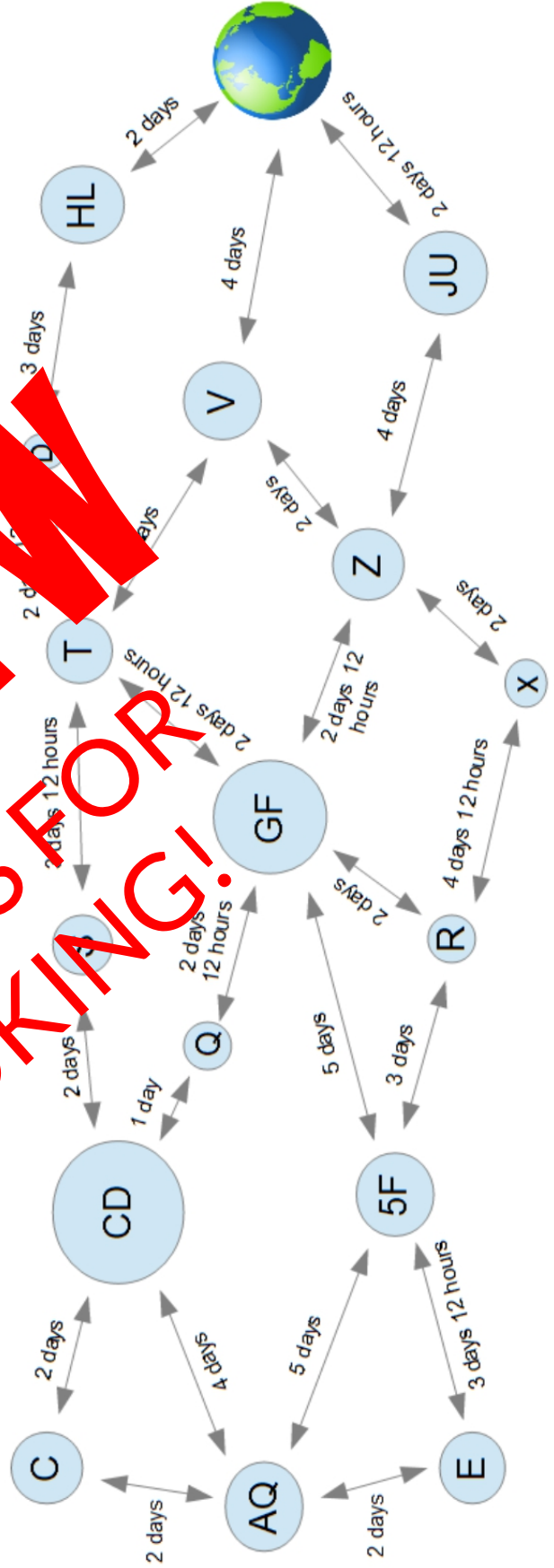
CLUE 3: SPACE TRAVEL

The aliens all travelled vast distances to get to Earth. The galactic police have found out which route the aliens took to get to Earth and when they left their home planet, but they need your help to find out when they arrived on Earth. The reason the alien spaceship was stolen on the 24th of November, so any alien which arrived after this date must be innocent.

CROSS ANY ALIENS WHO ARRIVED AFTER 24th NOVEMBER OFF THE SUSPECT LIST

(Hint: Just add the travel times between the planets, e.g. To go from planet T → JU – Earth is (4 days + 2 days 12hours + 6days 12hours or 6.5days).

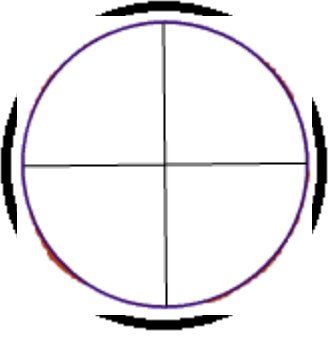

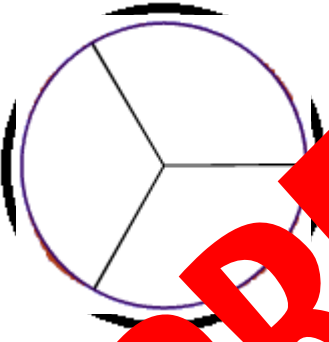

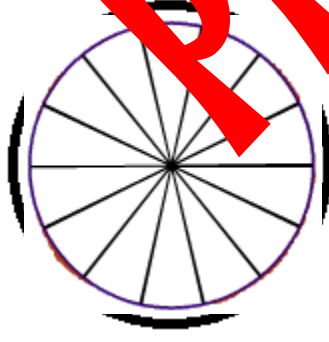
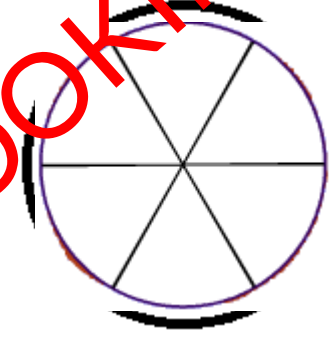
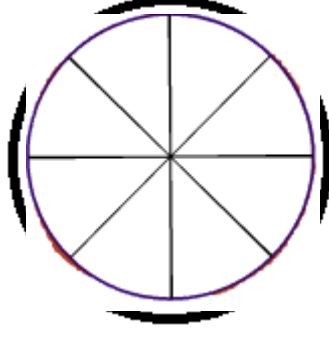
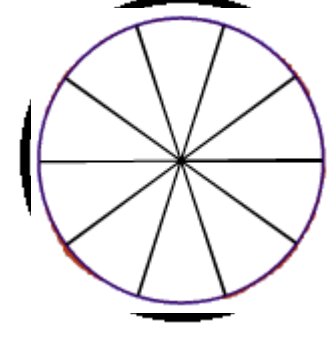
ALIEN	TRAVEL ROUTE	LEAVING TIME (all left at 12am, start of the day)	ARRIVAL AT EARTH
ZOLTAR	X→Z→V→EARTH	14 th November.	
NORGAL	S→T→V→EARTH	7 th November.	
KLORF	D→HL→EARTH	16 th November.	
ARAIMAL	C→CD→Q→GF→Z→V→EARTH	12 th November.	
LELA	R→X→Z→JU→EARTH	9 th November.	
SWAXA	E→5F→R→X→Z→V→EARTH	2 nd November.	
NUKEER	5F→GF→Z→JU→EARTH	5 th November.	
YHOCORH	AQ→CD→S→T→V→EARTH	10 th November.	



CLUE 4: WHOSE GOT THE ENERGY?

All aliens on Earth wear a special energy converter which lets them be transformed so they appear to look like humans. Stealing the ray gun would have drained a large amount of energy from one of these converters. You determine that the alien who still has the most amount of energy charge left on their converter couldn't have committed the crime.

Which Alien has the most amount of charge on their converter?
(Hint – Shade in the fractions on the converters to help you compare)

 <p>(Shade in the charge)</p> <p>Zoltar converter charge is at $\frac{3}{4}$</p>	 <p>(Shade in the charge)</p> <p>Lela converter charge is at $\frac{10}{15}$</p>
 <p>(Shade in the charge)</p> <p>Jorga converter charge is at $\frac{2}{3}$</p>	 <p>(Shade in the charge)</p> <p>Swaxa converter charge is at $\frac{10}{12}$</p>
 <p>(Shade in the charge)</p> <p>Klorf converter charge is at $\frac{9}{14}$</p>	 <p>(Shade in the charge)</p> <p>Nukeer converter charge is at $\frac{4}{6}$</p>
 <p>(Shade in the charge)</p> <p>Araimal converter charge is at $\frac{5}{8}$</p>	 <p>(Shade in the charge)</p> <p>Yhocorh converter charge is at $\frac{5}{10}$</p>

Cross the alien with the most amount of energy off your suspect list

EXTENSION ACTIVITY: FIND THE RAY GUN

Well done commander, you found which alien committed the crime!

You look over to the alien and he snarls at you. "You were better than I thought, but if you arrest me you will never find the ray-gun, you would need to be able to fly my spaceship for that and it has a special code which only I know." You smile to yourself and whisper back to the alien, "Breaking codes is what I do best."

After arriving at the alien's ship you look down at command center – you need to enter the correct numbers into the right spots in order to fly the ship so you can retrieve the ray-gun.

DIRECTIONS Fill in each circle with a number from the number bank. Each number can only be used once. The three circles which connect to the middle star must have numbers which add up to the middle number (21).



NUMBER BANK

5	9	11	3	1
6	15	4	10	12

