

## INDEX OF ACTIVITIES

CARD 1	Maximise and minimise
CARD 2	The bungee jumping teddy bear
CARD 3	Cross number
CARD 4	3-D Surfaces
CARD 5	Tiling with triangles
CARD 6	The two towers of Hanoi
CARD 7	Mathematical bingo
CARD 8	Student problem
CARD 9	Is this a fair game?
CARD 10	Stitching a parabola
CARD 11	Heads and tails
CARD 12	Motorway designer
CARD 13	Car importer
CARD 14	Grid fill
CARD 15	Barking mad
CARD 16	Pelican's cube
CARD 17	Rhombic dodecahedron
CARD 18	Hexaflexagon
CARD 19	Dissections
CARD 20	Pentagon construction

## THE BUNGEE JUMPING TEDDY BEAR

For this activity you will need:

- elastic
- a teddy or weight
- a ruler
- graph paper

How long should the elastic be for the teddy bear to jump from different heights?



TABLE OF RESULTS

<i>Height of jump</i>	<i>Length of bungee</i>

What if the elastic was double?

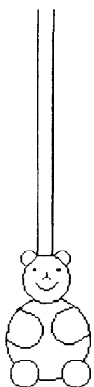


TABLE OF RESULTS

<i>Height of jump</i>	<i>Length of bungee</i>

Draw a graph of the length of the elastic for different heights and explain the results.

*Show your completed graph to your teacher !*

## MATHEMATICAL BINGO



For this activity you will need:

- paper and a pencil each
- and one copy of this card.

This is a game for any number of people. Each player must draw a large square containing 25 smaller squares. Write the numbers from 1 to 25 in any order in these boxes. Try to avoid any patterns so that each card is different. Now the question master reads out question one, and allows a suitable time for the players to work out the answer. When each player has calculated the answer, he shades the correct number on his card. The question master then continues with the rest of the questions in order.

The first player to get a line of five shaded squares in any direction (horizontally, vertically or diagonally) wins. You can either continue to allow other players to get five in a row, or you can play a new game.

There follow five sets of bingo questions. The first set is more general knowledge, the others are more mathematical. Don't let anyone who is going to play see the questions before you start. In sets that have only 24 questions, one of the questions has two solutions.

### Bingo Questions - Set 1 (of 5)

1. "Snow White and the .... dwarfs".
2. Number of hours in a day.
3. Proverbial number of lives of a cat.
4. Signs of the Zodiac.
5. Total number of spots on normal dice.
6. "... Thousand Leagues under the Sea."
7. Sum of the days in a week, the weeks in a month and the months in a year.
8. Unlucky for some.
9. Sum of the first five odd numbers.
10. If A is 1 and B is 2 what is R?
11. Old enough to drive a car.
12. The only even prime number.
13. Address of the chancellor of the Exchequer.
14. Number of events in a decathlon.
15. "... gold rings".
16. Voting age + 1
17. First number in alphabetical order.
18. Number of ounces in a pound.
19. "... Blind Mice".
20. Number of balls in a snooker triangle.
21. Le .... Juillet. Bastille Day.
22. Half a dozen.
23. Number of faces of a tetrahedron.
24. Length of a cricket pitch in yards.
25. Number of pints in half a quart.

## ***STUDENT PROBLEM***

For this activity each person will need a copy of this sheet and a pencil.

Five students going back to their universities are queuing to buy five tickets at Paddington Station. They all have different first names, different surnames (Black, Brown, Green, Smith and White), study different subjects, take part in different sporting activities and are going to different places.

- 1.) Nick is a chemistry student.
- 2.) The maths student is second in line.
- 3.) Black is going to Bristol.
- 4.) Brown is going to Exeter.
- 5.) The physics student is three places behind Sue.
- 6.) John plays soccer.
- 7.) The student at the head of the queue buys a ticket to Oxford.
- 8.) The hockey player is third in line.
- 9.) The tennis player is going to Bristol.
- 10.) Helen is the last but one.
- 11.) The law student goes swimming.
- 12.) White is behind the squash player.
- 13.) Green is at the end of the queue.
- 14.) The physics student is going to Reading.
- 15.) Brown is behind Smith.
- 16.) White is behind the maths student.
- 17.) Tom is in front of the student going to Exeter.
- 18.) The history student is behind the student going to Bath.

Can you sort out the full names, subjects studied, sporting activities and destinations of the five students. A grid on the back of this card may help you.

(If you get stuck, there is an easier problem on the back too, to practise on).

**Answer**

	First name	Surname	Subject	Sport	Destination
1st					
2nd					
3rd					
4th					
5th					

		First name	Surname	Subject	Destination
		Tom	Smith	Maths	Bristol
		Sue	Brown	Chemistry	Bath
		Nick	White	Physics	Exeter
		Helen	Black	History	Oxford
		John	Green	Law	Reading
Sport	Soccer				
	Hockey				
	Tennis				
	Squash				
	Swimming				
Dest.	Bristol				
	Bath				
	Exeter				
	Oxford				
	Reading				
Subject	Maths				
	Chemistry				
	Physics				
	History				
	Law				
Surname	Smith				
	Brown				
	White				
	Black				
	Green				

Here is the easier problem:

- 1.) John was not the student who studied maths at Warwick.
- 2.) The football player who does not go to Oxford was the physics student.
- 3.) Lisa, who plays netball, does not study maths.

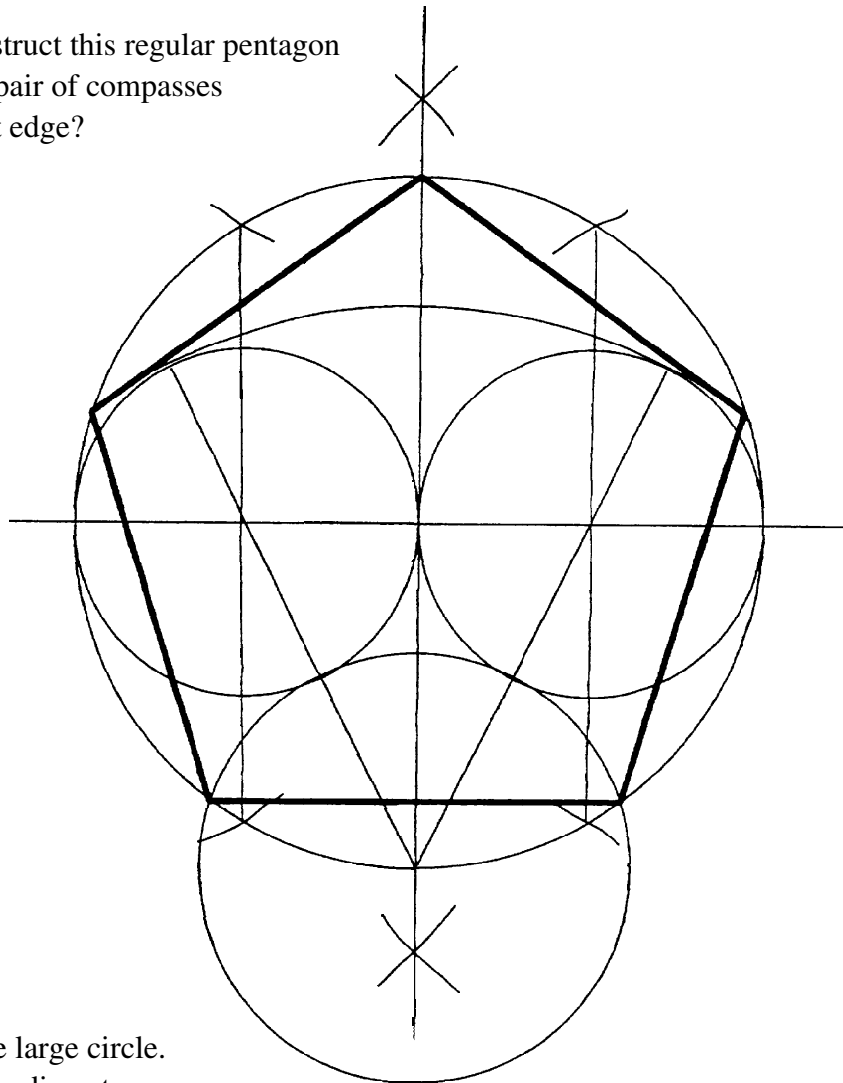
	Maths	Physics	English	Warwick	Leeds	Oxford	Football	Hockey	Netball
John									
Lisa									
Sam									
Football									
Hockey									
Netball									
Warwick									
Leeds									
Oxford									

**Answer**

	Subject	University	Sport
John			
Lisa			
Sam			

## PENTAGON CONSTRUCTION

Can you construct this regular pentagon using only a pair of compasses and a straight edge?



### Instructions:

- 1.) Draw the large circle.
- 2.) Draw in a diameter.
- 3.) Construct the perpendicular bisector of the diameter.
- 4.) Using the same radius, divide the perimeter of the circle into six equal parts.
- 5.) Draw in the two shorter vertical lines.
- 6.) Draw in the two little circles.
- 7.) Draw in the V-shape lines.
- 8.) Draw the circle at the bottom.
- 9.) Using the same centre, draw an arc to touch the edge of the little circles at the top of the V-shape lines.
- 10.) Draw the pentagon by joining the correct points.

Show your pentagon to your teacher !