The**Swot**Shop

Galileo's Gang Program

Senior

Year 5,6

Sample Lesson with Teacher Instructions

The**Swot**Shop

This is a sample lesson from the **Galileo's Gang Senior Program – suited for Year 5,6 students.** It includes basic teacher instructions. This lesson runs for 2 hours.

All Swot Shop Programs are developed specifically for bright, gifted and motivated learners.
The Galileo's Gang Program is conducted in small ability streamed classes and taught by a qualified and experienced teacher.

The program is developed to enrich, enhance and complement the learning that students experience in school settings. It uses games, tactile materials and a range of engaging teaching methods to provide a unique learning experience that stimulates students strategic and higher-level thinking skills.

To learn more please contact us on (02) 9634 2000.

SENIOR GALILEO'S GANG

Sample Lesson

Word Power
Allow a fixed period of time for the sheet – possibly 10 minutes. At the end of the activity a partner should check the existence of each of the words and the scoring. Congratulate the highest scorer.

The solution to last week's homework is in the students' booklets to enable them to correct their own work at home. Complete the blue Homework record sheet in the back of the roll.

Mensa Riddles
Students may work with a partner to complete as many puzzles as they can in the time available. Allow time to discuss the students' responses.

Coin Puzzles
Students may work with a partner for this activity. Give each student a selection of counters and instruct them to record the solutions on the worksheet. The puzzles may be completed in any order.

Test Your Concentration
Refer to the enclosed sheet.

iPad: MathLands – Tower of Hanoi
Refer to the enclosed instruction sheet.

The Product Game
Spend time discussing appropriate strategies after students have played a couple of rounds.

Homework: Missing Letters 1

Equipment:
- small coloured counters
- stopwatch
- red/yellow counters
- two containers of paper clips
- iPads

WORD POWER

Below is a list of three letter combinations. By adding letters at the beginning and/or the end, make the three letter words into as long a word as you can. You may use dictionaries but there is a time limit on the activity. For each round, your score will be equal to the number of letters you have added.

Eg ......UNG....... could become h UNG ry which scores as 3

<u>Score</u>

1. ....EST.......

2. ....OLY.......

3. ....PER.......

4. ....SHO.......

5. ....AMB.......

6. ....OUN.......

7. ....AIN.......

8. ....ROO.......

9. ....DLY.......

10. ....ERT.......

MENSA RIDDLES

1. Alex and Georgina were born at the same hour of the same day to the same mother in the same hospital. They have the same father and yet they are not twins. Why?

2. In the early 18th century Mrs Abigail Eischrank of Cambridge, Massachusetts, gave birth to 13 children. Exactly half of them were girls. Explain.

3. Leonardo da Vinci carried out the following experiment. He held a sphere of very thin fragile glass above a floor of solid stone. When he dropped it, the sphere fell two metres without breaking. How?

4. Dave went with his uncle to the movies. They went up to the ticket booth and Dave had to pay, as usual. But that was not the worst of it. The ticket seller said, "You can go in but not your friend." Why wouldn't she let Dave's uncle in? He was smartly dressed and had often been to the cinema before without any trouble.

5. Six men drove over 240 km in a car at an average speed of 100 k/h. The trip took 2.4 hours. When they unpacked their luggage, they realised that the car had a flat during the whole journey. Why had they not noticed this before?

6. When the police arrived, the man was lying under the car dead. Investigations revealed that although he was not the car's owner, he was the last person to drive it. The car had last been driven that morning, but the man's time of death was established at about 3 p.m. The car's owner was discovered in the south of France. No one else was involved in the affair and eventually the police and the coroner were satisfied that no crime had been committed. What is the explanation?

7. Sid Lightly always moans that if only people told the truth he would sell more of his goods. What does he make?

8. What has three hands, the second hand really being the third?

9. Smart Alec sat in biology class with a smug grin on his face. "What are you looking so pleased about?" asked the teacher. "I know something that has four legs and two arms," announced Alec proudly. The teacher racked his brains but could think of no creature which fitted the description. What did Alec mean?

10. In an orchestra there is something which is neither blown, bowed, plucked nor struck but without which the others could not play. What is it?

COIN PUZZLES

1. Arrange nine coins in two rows with five coins in each row.

2. Arrange ten coins to form a triangle of coins as shown. Turn the triangle upside down by rearranging only three of the coins.
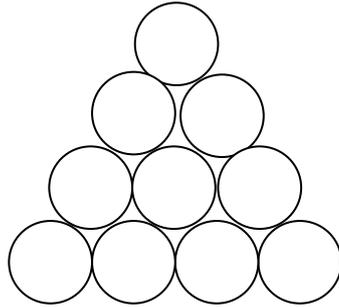
3. Arrange nine coins in three rows with four coins in each row.

4. Can you arrange four coins on a surface in such a way that all the coins are the same distance apart?

5. Arrange twelve coins in four rows with four coins in each row.

6. Arrange nine coins so that you have three and one half dozen.

7. Arrange ten coins in five rows with four coins in each row.

8. Arrange six coins to form a cross as shown. Move one of the coins so as to form two straight rows with four coins in each row.
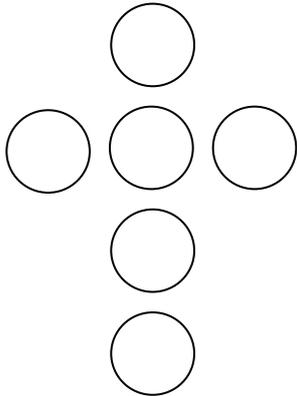
9. Arrange twelve coins in six rows with four coins in each row.

10. Arrange six coins in a row with the first three coins all heads and the next three coins all tails, as shown below. Now rearrange them in the order of tails, heads, tails, heads, tails, heads by moving only three coins.
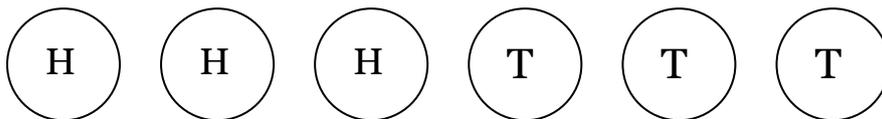
11. Arrange sixteen coins in ten rows with four coins in each row.

12. Arrange nineteen coins in eight rows with five coins in each row.

MENSA RIDDLES ANSWERS

1.   Alex and Georgina were born at the same hour of the same day to the same mother in the same hospital. They have the same father and yet they are not twins. Why?

      They are two of a set of triplets.

2.   In the early 18th century Mrs Abigail Eischrank of Cambridge, Massachusetts, gave birth to 13 children. Exactly half of them were girls. Explain.

      The other half were also girls.

3.   Leonardo da Vinci carried out the following experiment. He held a sphere of very thin fragile glass above a floor of solid stone. When he dropped it the sphere fell two metres without breaking. How?

      He held it more than 2 metres above the floor. True, it fell 2 metres without breaking but smashed when it hit the floor.

4.   Dave went with his uncle to the movies. They went up to the ticket booth and Dave had to pay, as usual. But that was not the worst of it. The ticket seller said, "You can go in but not your friend." Why wouldn't she let Dave's uncle in? He was smartly dressed and had often been to the cinema before without any trouble.

      It was an adult movie and Dave's uncle is a child.

5.   Six men drove over 240 km in a car at an average speed of 100 k/h. The trip took 2.4 hours. When they unpacked their luggage, they realised that the car had a flat during the whole journey. Why had they not noticed this before?

      The spare tyre was flat.

6.   When the police arrived, the man was lying under the car dead. Investigations revealed that although he was not the car's owner, he was the last person to drive it. The car had last been driven that morning, but the man's time of death was established at about 3 p.m. The car's owner was discovered in the south of France. No one else was involved in the affair and eventually the police and the coroner were satisfied that no crime had been committed. What is the explanation?

The dead man was a mechanic. He had been servicing the car while the owner went on holiday. While he was working on the car the jack gave way and the car fell on him.

7.   Sid Lightly always moans that if only people told the truth he would sell more of his goods. What does he make?

birthday candles

8.   What has three hands, the second hand really being the third?

a clock with a second hand

9.   Smart Alec sat in biology class with a smug grin on his face. "What are you looking so pleased about?" asked the teacher. "I know something that has four legs and two arms," announced Alec proudly. The teacher racked his brains but could think of no creature which fitted the description. What did Alec mean?

an armchair

10.   In an orchestra there is something which is neither blown, bowed, plucked nor struck but without which the others could not play. What is it?

conductor's baton

Test Your Concentration

Form groups of about three. Each team takes a turn to come to the front and their subtraction speed is to be measured on a stopwatch. Each member of the team is to say the next number in the subtraction sequence which starts with the first number, ends with the last and progressively moves downward by subtracting 1, then 2, then 3, etc. As soon as an error is detected the team must return to the starting number, but the watch is not stopped. Members of the class should raise their hands when they detect an error.

Team 1: Start at 50; Stop at 5
(50, 49, 47, 44, 40, 35, 29, 22, 14, 5)

Team 2: Start at 75; Stop at 30
(75, 74, 72, 69, 65, 60, 54, 47, 39, 30)

Team 3: Start at 84; Stop at 39
(84, 83, 81, 78, 74, 69, 63, 56, 48, 39)

Team 4: Start at 61; Stop at 16
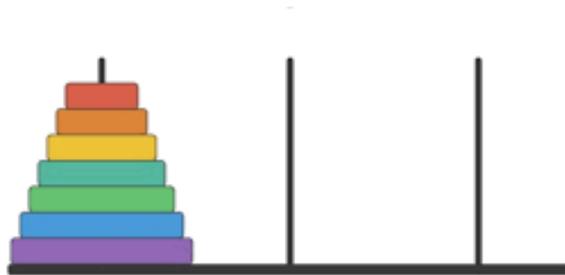(61, 60, 58, 55, 51, 46, 40, 33, 25, 16)

Team 5: Start at 72; Stop at 27
(72, 71, 69, 66, 62, 57, 51, 44, 36, 27)

MathLands

Information

The Tower of Hanoi consists of three rods, and a number of disks of different sizes which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape.

The objective of the puzzle is to move the entire stack to another rod, obeying the following rules:

- Only one disk may be moved at a time.
- Each move consists of taking the upper disk from one of the rods and sliding it onto another rod, on top of the other disks that may already be there.
- No disk may be placed on top of a smaller disk.

With three disks, the puzzle can be solved in seven moves.

Demonstrate, on one iPad how to play the game Tower of Hanoi.
Distribute one iPad per student and discuss the use and care of the iPad.

Students find the appropriate icon and gently tap it. They are to then read the history of the Tower of Hanoi puzzle.
On the home page students tap the icon – New Game which will show the game Tower of Hanoi. Students are to turn the sound OFF and then move the disks to solve the puzzle.

If students complete the puzzle in 7 moves, they are to tap the Play Next Level icon and play a game at Level 2. If the puzzle is completed in more than 7 moves, students should tap the Play Again icon and have another attempt at the same level. Students continue at their own pace, aiming to reach the highest level they can within the allotted timeframe.

The Product Game

Play the Product Game several times with a partner. Look for interesting patterns and winning strategies. Make notes of your observations.

Product Game Rules

1. Player A puts a paper clip on a number in the factor list. Player A does not mark a square on the product grid because only one factor has been marked; it takes two factors to make a product.

2. Player B puts the other paper clip on any number in the factor list (including the same number marked by Player A) and then shades or covers the product of the two factors on the product grid.

3. Player A moves *either one* of the paper clips to another number and then shades or covers the new product.

4. Each player, in turn, moves a paper clip and marks a product. If a product is already marked, the player does not get a mark for that turn. The winner is the first player to mark four squares in a row – up and down, across, or diagonally.

The Product Game

1	2	3	4	5	6
7	8	9	10	12	14
15	16	18	20	21	24
25	27	28	30	32	35
36	40	42	45	48	49
54	56	63	64	72	81

Factors:

1 2 3 4 5 6 7 8 9

Missing Letters 1

Put the missing letters in each space.

Write the whole word out under each wheel.

Wheel 1: S C H L O O

Wheel 2: B U E R R

Wheel 3: P S A T N

Wheel 4: R R A E D

Wheel 5: E K Y C H

Wheel 6: O N S L S

Wheel 7: R S L R U

Wheel 8: S O R C E

Wheel 9: S R I C H T

Wheel 10: S U D T E

Wheel 11: T S E I N S

Wheel 12: P S R S T

Wheel 13: E T R C A

Wheel 14: P E L I C

Wheel 15: N I G A D

Wheel 16: E D C A N

Wheel 17: L S P I P

Wheel 18: U P P T E

Wheel 19: S C S E R

Wheel 20: M N R I G

Wheel 21: B T S E L

Wheel 22: H T H E A