TheSwotShop

Maths Talent Program

Year 5,6

Maths Talent B

Sample Lesson with Teacher Instructions

The Swot Shop

This is a sample lesson from the **Maths Talent Program – Maths Talent B suited for Year 5,6 students.** It includes basic teacher instructions. The lesson runs for 90 minutes.

All Swot Shop Programs are developed specifically for bright, gifted and motivated learners.

The Maths Talent Program is conducted in 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.

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

MATHS TALENT B

Sample Lesson

Maths Quiz
Allow students five minutes to complete the quiz (try to minimise copying). Have students swap booklets and mark each other's work with a tick or cross only. The booklets are to be returned to their owners and the questions must be explained with relevant working and/or diagrams on the whiteboard. Students must show, in red pen, the correct answer and working for any quiz answers where they made an error. Ensure that students are given an opportunity to learn from their mistakes and ask for help with questions they did not understand.
The results are to be recorded on the Maths Quiz sheet.

The solution sheet for last week's homework is in the students' booklets so they can correct their homework at home.

Order of Operations
Read through and discuss the information and example about using Order of Operations. Complete Part A as a teacher-directed activity, discussing each question before instructing students to record the correct answer. Encourage the students to work independently to complete Parts B and C. Correct and discuss before asking the students to complete Part D. Part D requires students to write their own equations and to find a solution to the problem.

Maths Relay
Randomly place students in pairs. Give each pair a relay sheet and explain the rules.
- The questions may be answered in any order.
- When a student has answered a question he/she must take the sheet to be marked, but only one solution can be brought for checking at a time.
- If the answer is correct, award two stamps and the student attempts another question.
- If the answer is incorrect, the students must have another attempt.
- If the answer is correct on the second attempt, award one stamp.
- If the answer is incorrect on the second attempt they must leave that question and attempt another.
- When one team has completed all ten questions the relay is finished and the team/s with the most stamps is announced the winner.
- Award ribbons to the winning team/ teams for this activity.

Make sure there is time to discuss the questions the students found difficult.

Game: Remainder Race
Refer to the enclosed instruction sheet.

(P.T.O.)

Equipment:
- small translucent coloured counters
- one ordinary die per pair of players

Coordinate Graphing
Introduce the following mathematical terms to the students

- Cartesian plane: the 2-dimensional plane that is the coordinate system
- X-axis: the horizontal axis
- Y-axis: the vertical axis
- Coordinate point: a point on the Cartesian plane represented by an x-value and a y-value e.g. (4,2) is the point where x=4 and y=2
- The Origin: the point (0,0) on the Cartesian plane

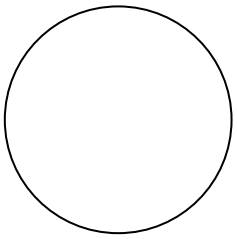
It may be appropriate to draw the Cartesian plane on the whiteboard and have students mark the coordinate points.
Students use the Cartesian plane to decode the messages on the worksheet.
Students then have the opportunity to encode their own message using the same grid and get a partner to decode it.

Homework
Ponder Puzzles

Maths Quiz

Score:
/5

Write the answers to the following questions in the space provided. Where necessary, you should do your working out on this sheet.

1.	Write the following number using numerals: six million and forty-two.	
2.	Shade a segment of this circle:	
3.	The lowest common multiple of the three numbers 24, 16 and x is 8. Find all the values that x could be.	
4.	It took 7 hours to travel 525 km north to Queensland at a fixed speed. At the same speed, how far would we travel in 2 hours?	
5.	Five numbers have an average of 6. If one more number is added, the average changes to 7. What was the extra number?	

ORDER OF OPERATIONS

Remember:

- First, moving from left to right, work anything that is in brackets.
- Then, moving from left to right, work any multiplication or division.
- Then, moving from left to right, work any addition or subtraction.

Brackets should only appear in an expression where the normal order of operations needs to be changed.

Example:

Simplify 20 + 7 × 2

If the expression is 20 + 7 × 2, by using order of operations, it is assumed that 7 needs to be multiplied by 2 first and then the result needs to be added to 20.

If 20 needed to be added to 7 first, before multiplying the result by 2, brackets would need to be inserted and the expression would be (20 + 7) × 2. This is because the operations you need to complete do not follow the normal order of operations.

You will see that in the first expression, the answer would be 34, but the answer to the second equation (where the brackets were inserted) is 54. This should remind you that you need to be careful when using order of operations and when placing brackets in an expression yourself. If you are not careful, you could end up with an incorrect result!

Work the following equations using the correct order of operations.

Part A

1. 5 × 6 – 3 × 4 =	**2.** 5 × (6 – 3) × 4 =
3. 60 ÷ 6 ÷ 2 =	**4.** 60 ÷ (6 ÷ 2) =
5. 60 ÷ 6 × 2 =	**6.** 60 ÷ (6 × 2) =
7. 7 × 6 – 5 × 4 + 3 ÷ 2 =	**8.** 7 × 6 – 5 × (4 + 3) ÷ 2 =

Part B

1. 12 + 8 × 2 =	**2.** (12 + 8) × 2 =
3. 16 – 8 × 2 =	**4.** (16 – 8) × 2 =
5. 30 ÷ 6 ÷ 2 =	**6.** 30 ÷ (6 ÷ 2) =
7. 30 ÷ 3 × 2 =	**8.** 30 ÷ (3 × 2) =
9. 2 × 3 + 4 × 5 =	**10.** 2 × (3 + 4) × 5 =

Part C

1. $15 + 8 \times 3 =$	**2.** $15 + (8 \times 3) =$
3. $(15 + 8) \times 3 =$	**4.** $7 \times 4 - 3 \times 5 =$
5. $7 \times (4 - 3) \times 5 =$	**6.** $80 \div 8 \div 2 =$
7. $80 \div (8 \div 2) =$	**8.** $80 \div 8 \times 2 =$
9. $80 \div (8 \times 2) =$	**10.** $13 \times 6 - 13 \times 4 - 13 \times 2 =$

Part D

Write and work your own expressions for these problems.

1. Tim was trying to save up his money. He saved five $2 coins himself, then his mother gave him $10 to put towards his savings. How much money did he have?

2. Tickets for the local cinema cost $10 for adults and $5 for children. If Sally took her daughter to the movies on Saturday and Sunday, how much did she spend on tickets?

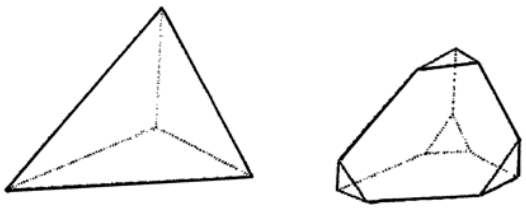
3. Jacob had $18 in his piggy bank. If he spent $2 every day this week, how much money would he have left?

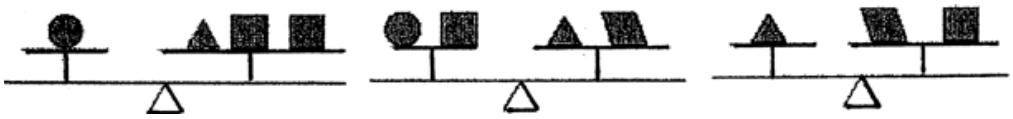
4. I have 18 bicycles. 7 of them are brand new and the older bicycles all need new tyres. How many tyres will I need to buy?

5. James plays marbles with 8 other children at school. So far, James has won a total of 32 marbles. If he wants to equally share his 32 marbles with half of the children he plays with, how many marbles will each child receive?

6. Jane read 5 books that each had 60 pages. Her younger sister Carol read 3 books that each had 20 pages. How many more pages did Jane read?

MATHS RELAY

1.	When 4001 is divided by 400 the remainder is a) 199 b) 10 c) 9 d) 1 e) 0
2.	If 271 x 29 = 7859 then 2.71 x 2.9 is equal to a) 0.07859 b) 0.7859 c) 7.859 d) 78.59 e) 785.9
3.	A solid triangular pyramid has four vertices. Each corner (vertex) is cut off (see new figure). How many vertices will the new figure have?  a) 24 b) 9 c) 12 d) 15 e) 18
4.	If $a \triangle b = a^2 - b^2$, then $5 \triangle 4$ is equal to a) 2 b) 15 c) 4 d) 16 e) 9
5.	A sewing machine stitches 0.6 km of cloth in one hour. The rate of stitching in metres per minute is a) 0.01 b) 0.1 c) 1 d) 10 e) 100

6.	When a die is rolled the chance of obtaining a 5 is $^1/_6$. When two dice are rolled the chance of obtaining a sum greater than 5 is a) $^1/_6$ b) $^1/_3$ c) $^5/_6$ d) $^2/_9$ e) $^5/_{36}$
7.	The value of 499 – 497 + 495 – 493 +… + 3 – 1 is a) 500 b) 250 c) 2 d) 498 e) 496
8.	Find the missing number if 182 x △ = 2002 a) 8 b) 9 c) 10 d) 11 e) 12
9.	An ant covers a distance of 120 metres in 4 hours. The average speed of the ant in centimetres per minute is a) 80 b) 60 c) 50 d) 40 e) 20
10.	The diagrams show three scales. On each scale there are different objects on each side which balance each other, as shown.  Diagram 1 Diagram 2 Diagram 3 How many ● -shaped objects will balance a ■ -shaped object? a) 3 b) 4 c) 5 d) 6 e) 7

Remainder Race

EQUIPMENT: 2 counters, 1 die and the Remainder Race board

This is a game for two people. To play the game you need to be able to do short division.

RULES:

1. Place your counters at the starting point.
2. Take it in turns to roll the dice.
3. The number you roll is then divided into the number of the square your counter is on.
4. You then move the number of spaces that is the remainder.
5. If there is no remainder you can't move.
6. If you make an error you lose your turn.

For example, if you rolled a 4 on your first turn

$\frac{25}{4}$ - 6 remainder 1, move one space.

Remainder Race

Start → 25	31	36	21	35	82 ↓
46	48	23	45	72	18
↓ 81	76	22	24	21	26
27	29	27	45	22	↓ 67
↓ 65	74	70	55	20	14
44	24	66	82	93	↓ 28
↓ 100	48	24	64	56	*Finish* 48

Decoding on the Cartesian Plane

Decode the following messages using both positive and negative coordinates.

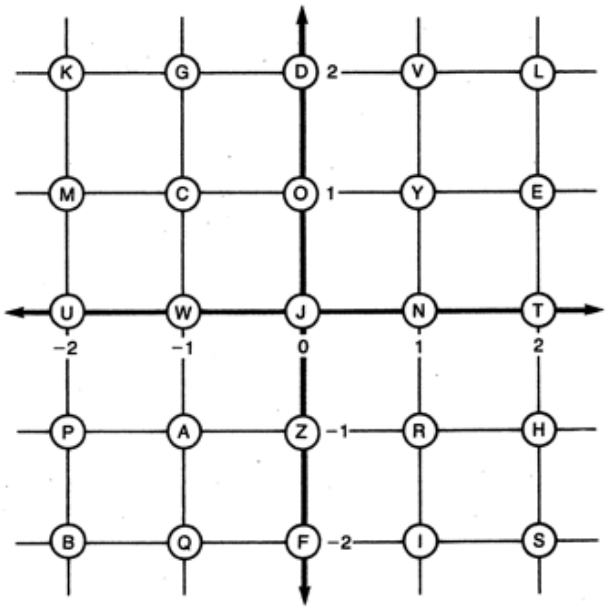
1. _____ _____ / _____ _____ _____ _____ _____ /
(1,⁻2) (1,0) (⁻1,0) (2,⁻1) (1,⁻2) (⁻1,1) (2,⁻1)

_____ _____ _____ _____ / _____ _____ _____ _____ /
(⁻1,1) (1,⁻2) (2,0) (1,1) (⁻1,0) (2,1) (1,⁻1) (2,1)

_____ _____ _____ / _____ _____ _____ _____ ?
(1,1) (0,1) (⁻2,0) (⁻2,⁻2) (0,1) (1,⁻1) (1,0)

Answer: _____

_____



2. _____ _____ _____ _____ /
(⁻1,0) (2,⁻1) (⁻1,⁻1) (2,0)

_____ _____ _____ _____ /
(⁻2,2) (1,⁻2) (1,0) (0,2)

_____ _____ /
(0,1) (0,⁻2)

_____ _____ _____ _____ /
(⁻1,0) (0,1) (1,⁻1) (⁻2,2)

_____ _____ /
(0,2) (0,1)

_____ _____ _____ / _____ _____ ?
(1,1) (0,1) (⁻2,0) (0,2) (0,1)

Answer: _____

_____

Make up a message of your own to decode:

Ponder Puzzles

Put any operation signs (+, -, ×,÷) in the boxes to make correct number sentences.

A

1 8 ☐ 6 ☐ 4 ☐ 2 = 50

2 8 ☐ 6 ☐ 4 ☐ 2 = 56

3 8 ☐ 6 ☐ 4 ☐ 2 = 10

4 8 ☐ 6 ☐ 4 ☐ 2 = 4

B

1 6 ☐ 2 ☐ 3 = 5

2 6 ☐ 2 ☐ 3 = 1

3 6 ☐ 2 ☐ 3 = 12

C

1 12 ☐ 6 ☐ 8 ☐ 4 = 38

2 12 ☐ 6 ☐ 8 ☐ 4 = 64

3 12 ☐ 6 ☐ 8 ☐ 4 = 104

4 12 ☐ 6 ☐ 8 ☐ 4 = 0

D

1 12 ☐ 6 ☐ 2 = 9

2 12 ☐ 6 ☐ 2 = 4

3 12 ☐ 6 ☐ 2 = 0