BLOOMSM4TH

Makes Maths Fun

Level 7

PATTERNS & ALGEBRA

Bloomsmath is a comprehensive mathematics program which provides a fun way for every student to be learning to the best of their ability.

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BLOOMSM4TH Makes Maths Fun

Level 7

Patterns & Algebra

Level 7 is designed for students in their seventh year at school often called Year 6. Students will construct, verify and complete number sentences involving the four operations with a variety of numbers.

Knowledge: Students will use information to solve a grid logic puzzle.

Students who demonstrate proficiency in this activity move on to Comprehension.

STOP

Students stop here as they require additional teacher support to master this activity.

Comprehension: Students will use equations to find the digits which have been replaced by letters.

Students who demonstrate proficiency in this activity move on to Application.

STOP

Students stop here if time has run out or they require additional support with this activity.

Application: Students will solve a number of pattern puzzles when they complete the activity "Find My Rule".

Students who demonstrate proficiency in this activity move on to Analysis.

STOP

Students stop here if time has run out or they require additional support with this activity.

Analysis: Students will use squares to discover the relationship between a square's sides and its diagonal length.

Students who demonstrate proficiency in this activity move on to Synthesis.

STOP

Students stop here if time has run out or they require additional support with this activity.

Synthesis: Students will work in groups to share what they have found and see whether this is similar to their classmates.

Evaluation: Suggested questions provide a starting point for discussions related to Patterns & Algebra.

Students may complete more or fewer activities for each learning outcome depending on the time allocated and their strength in the area being covered.

All students should participate in the Evaluation discussion to encourage the use of mathematical language, logical reasoning and reflection on that which they have completed.

Name: _____

Knowledge

Use the information given below to solve this grid logic puzzle.

A local school talent competition featured a number of jugglers. Each juggler had a different name and juggled a different item. They each were also in a different class. (As with all grid-based logic puzzles, no option in any category will ever be used more than once.)

	Amy	Sam	Joe	Mick	Balls	Batons	Flashlights	Phones	6H	6J	6N	6T
First												
Second												
Third												
Fourth												
6H												
6J												
6N												
6T												
Balls												
Batons												
Flashlights												
Phones												

1. Of the person in 6T and the juggler who uses balls, the person in 6T went first and the other was Joe.
2. The juggler who went third used phones.
3. Mick used flashlights.
4. Sam was either in 6N or 6H.
5. The performer from 6J performed sometime after Joe.
6. The performer who went third wasn't from 6H.
7. The performer who went first was either the person who used phones or the performer who used batons.

Let's Try This Again

Progress To Comprehension

Name: _____

Comprehension

Each of the numbers from 0 to 9 needs to replace the letters from A to J below so that each number sentence makes sense.

A x C = 8	E - I = D
E + H = 7	A + J = 5
3 x J = 9	A + A = C
B ÷ D = B	G - C = F
J + D = C	G ÷ J = J
2 x F = G + D	A + B = D + G = I + C

Working Space

Answers:

A	B	C	D	E	F	G	H	I	J

Let's Try This Again

Progress To Application

Name: _____

Application

Find My Rule

Each pattern below has two different rules being used. Find the two rules and the next two numbers for each pattern.

1) 3, 4, 7, 8, 11, 12, 15, 16, _____, _____.

Rules:

2) 5, 3, 7, 5, 9, 7, 11, 9, _____, _____.

Rules:

3) 3, 5, 10, 12, 24, 26, 53, 54, 108, 110, _____, _____.

Rules:

4) 3, 2, 4, 3, 6, 5, 10, 9, _____, _____.

Rules:

5) 1, 2, 3, 6, 7, 14, 15, 30, _____, _____.

Rules:

6) 32, 64, 16, 32, 8, 16, 4, 8, _____, _____.

Rules:

7) 2, 5, 4, 8, 6, 11, 8, 14, _____, _____.

Rules:

8) 2, 3, 6, 8, 16, 19, 38, 42, _____, _____.

Rules:

Let's Try This Again

Progress To Analysis

Name: _____

Analysis

Use the squares drawn below, a ruler and a calculator to discover the relationship between a square's sides and its diagonal length.

Side Length	Diagonal Length	Relationship

Working space

Let's Try This Again

Progress To Synthesis

PA 7 AN

Name: _____

Synthesis

In the space below draw some additional squares to see if your idea works for squares of other dimensions. When you are happy with your findings compare your square findings with a classmate and see if you arrived at the same answer.

Evaluation

The following questions and activities are provide as a starting point for fun discussions related to Patterns and Algebra. During these conversations students will have an opportunity to use appropriate mathematical language in its correct context, to engage in reflection on the Patterns and Algebra activities they have completed and to use logical reasoning to tie their in-class mathematics to its everyday context.

Read the book Sir Cumference and the Dragon Pi by Cindy Neuschwander.

Have students see if they can create a grid logic problem for another class member to solve. How much information is too much and how much is too little.

How did students find the number for each letter - what was their reasoning.

Have students come out in front of the class and create a double step pattern and see if the class can solve their pattern.

How do they make these patterns and what helps students solve them ie. consecutive or constant versus increasing or decreasing progressions.

What relationship did students find for the sides versus diagonal of a square. Share these with the class.

Answers

Knowledge:

Order	Name	Item	Class
1st	Amy	Batons	6T
2nd	Joe	Balls	6H
3rd	Sam	Phones	6N
4th	Mick	Flashlights	6J

Comprehension:

A	2		F	5
B	8		G	9
C	4		H	0
D	1		I	6
E	7		J	3

Application Rules:

1 + 1, + 3
2 -2, +4
3 +2, x2
4 -1, x 2
5 x2, +1
6 x2, ÷4
7 +3, -1, +4, -1, +5, -1 (the number being added increases by 1 each time)
8 +1, x2, +2, x2, +3, x2, +4 (the number being added increases by 1 each time

Analysis:

Side x √2. = diagonal length