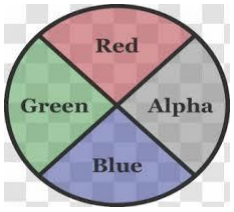
Ministry of Education, Youth & Information

Primary Exit Profile
Bringing Abilities to Light

STUDENT CAMP 2021

ABILITY ASSESSMENT



BOOKLET 2



PREPARED BY CURRICULUM UNIT, MoEYI

INTRODUCTION

Dear Students,

The Curriculum Unit of the MoEYI welcomes the opportunity to help you prepare for your final examination, the PEP Ability Test. We know that you have been facing some difficult times, but also that your faith in God has been keeping you strong. For some persons, doing a test is like doing a puzzle that is fun, but for others, it is a time of discomfort due to troubling emotions. Despite these differences, there is so much you can learn about yourself and about life from doing a test! So be encouraged as you are not alone and there are many persons waiting to support you because they, like us, want you all to taste the pleasure that comes with learning success.

This assessment booklet was designed to help you to succeed. It contains different kinds of tasks that will help you decide how ready you are and what you need to do to excel. The tasks will also require you to integrate the skills you have developed and the understandings you have gained from learning about different aspects of life through the various time-tabled subjects, the co-curricular activities and also from using what you have been taught in your everyday living. To benefit from each activity, remember to reflect on what you know, remain focused and optimistic and visualize yourself persevering to reach your goal. Above all, do your BEST by bringing every relevant strategy and technique you know to unravel the secret code that each test item tries to hide. If you are baffled by any item, treat the experience as a message that is pointing you to seek help from other sources of ideas.

As you learn and make progress towards achieving your goals, share new insights with members of your learning circle – family, friends, and faithful teachers/mentors.

So get ready, knowing that we are looking forward to hearing your story of VICTORY!

TIPS FOR PARENTS

General Note:

These booklets are developed by the Core Curriculum Unit of the Ministry of Education, Youth and Information (MoEYI) to support your child/ward in developing key skills for the upcoming PEP Ability Test. The Unit has tried to make the booklets as simple and user- friendly as possible so that your child will be able to work through most of the tasks independently. However, your role may become important at different points based on the ability of your child. Some tips are set out below for you:

- ✓ Schedule time slots for your child/ward to review/ revise work in the booklet. If the child also has online classes, you will need to carefully help him/ her to balance his/ her time.
- ✓ Give your child breaks between activities. Do not crowd the child with too many tasks in one block. Allow time for play.
- ✓ Guide your child/ward in going through the steps/ processes as outlined in the given examples for each activity. Avoid short-cuts.
- ✓ Have your child explain their thinking behind selected responses.
- ✓ Use simple household chores and projects to further your child's learning, for example measuring the ingredients for baking, budgeting for shopping and so on
- ✓ Play a supportive role but allow your child/ward to do the work required.
- ✓ You may seek support from the child's teacher (or the National Parent Teachers Association – NPTA) where you are unable to assist the child on your own with some areas of the tasks.
- ✓ Expose your child to additional resources available through radio and television lessons and the learning kits provided by the MoEYI. Speak to your teacher/principal to access the schedule for the lessons and to access the kits.
- ✓ Praise your child's efforts. *Have fun while learning with your child!*

TIPS FOR TEACHERS

General Note:

These booklets are developed by the Core Curriculum Unit of the Ministry of Education, Youth and Information (MoEYI) to supplement the preparation of your students for the upcoming PEP Ability Test. Some tips on the role you may play are outlined below:

- ✓ Familiarize yourself with the booklet and try as far as possible to align it to your lessons.
- ✓ You may use this resource in addition to other resources that you are currently using.
- ✓ As often as is required the activities recommended in the booklet should be differentiated to meet the diverse needs of your students.
- ✓ You can use this booklet in your *Student Camp sessions* or for take home activities for students to complete.
- ✓ Encourage them to ask questions during class time about any aspect of the booklet that they may find difficult.
- ✓ Mark/Assess the work that students have done in the booklet and supply them with feedback.
- ✓ Allow for student feedback through self-assessment activities such as student learning portfolios and the use of success criteria
- ✓ You may access further support through your school's Supervisory Officers or the Curriculum Unit

KEY POINTS AND PRELIMINARY ACTIVITIES

Teaching for the transfer of competencies will place emphasis on aspects of the NSC for the Grade 4 level. Below, is a summary of the Content Strand and related categories of the required thinking skills. Remember, consideration should be given to the mathematical processes students will have to be able to manipulate to successfully solve problems.



Thinking about Thinking

Exploration: Examine the statement below and think about your experience. What are your thoughts.

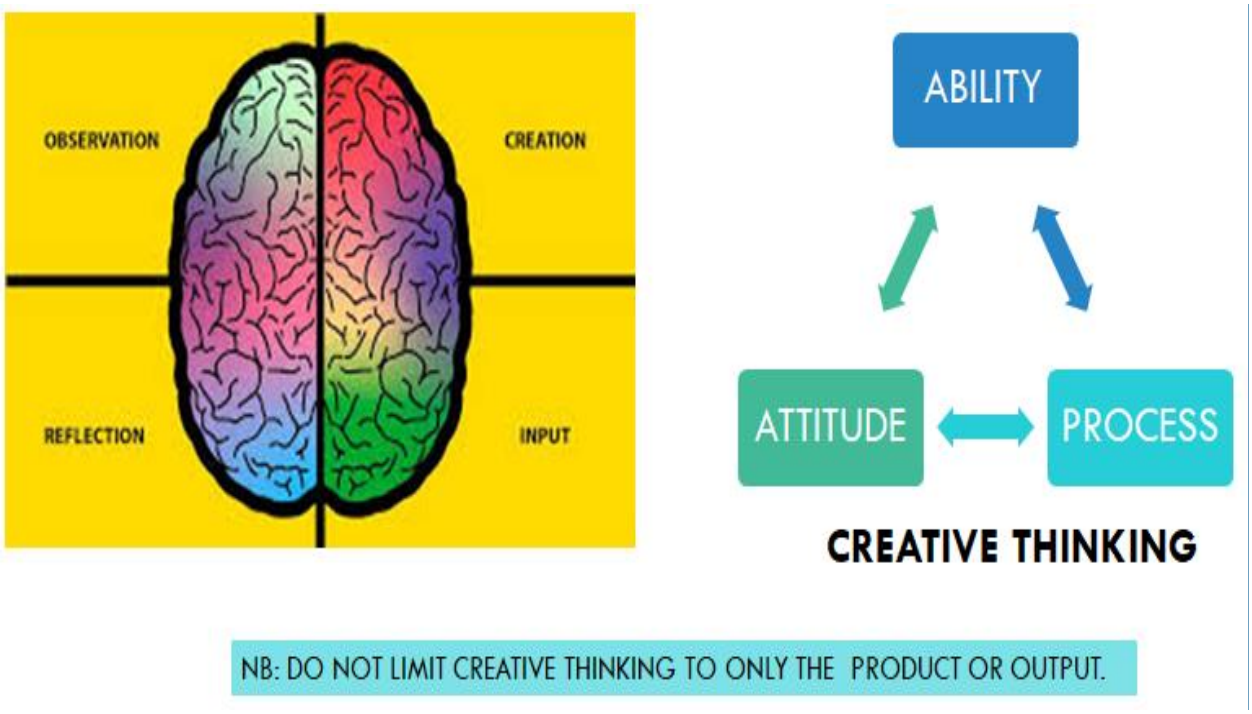
The problem isn't that Johnny can't read. The problem isn't even that Johnny can't think. The problem is that Johnny doesn't know what thinking is; he confuses it with feeling.

Thomas Sowell

What is thinking?

You would have answered this question based on the ideas that came to your mind while you were doing the Exploration Activity above. The diagram below should help you to check your answer to the questions you were asked above.

Connecting Pillars of Thinking & Creativity



Thinking is using your brain (mind) to make sense of the world and to make decisions about how you will respond. Reasoning is the term that is often used when we speak about thinking. Your experiences help you to think. The activities you do at home and at school are some of the ways you gain experiences. The ideas in your mind can be grouped in various ways. Mathematics can help you to form categories of ideas as you reason.

Categories in Quantitative Reasoning

Patterns

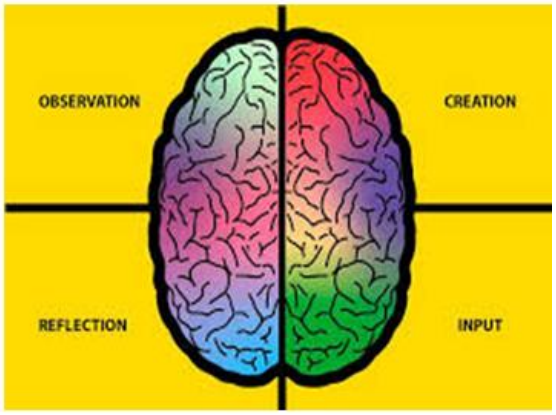
Representing Quantities

Comparing Quantities

Approximation/Estimation

Data Analysis

Problem Solving



Link pillars with one or more categories of reasoning.

Categories of Verbal Reasoning

Analogy

Classification

Essential Part

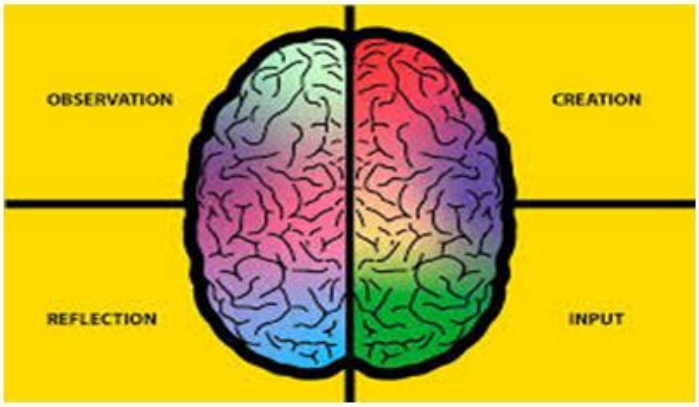
Sequencing

Text Completion

Reading

Artificial Language

Logical Deductions



Link pillars with one or more categories of reasoning.

Here is an activity to help you to see the importance of mathematics in a real life situation.

MATHEMATICS AND SHOEMAKING

What do you know about shoemaking?

List types of shoe you know.

What do you notice about the shoes you are wearing?

SHOEMAKER DADDY
Sidney Beck

His workshop's open now I see
He will not notice - it's just me.
His tools, his nails, his leatherware,
His hammers large and small are there,
All ready for his hands to bear
When he returns to take his chair.
The shoes he makes are neat each pair,
And some are leather dark or fair,
They're crafted all with love and care.
So here's my secret silent prayer :
I hope he takes me on his knee
And makes me some in small size three.



How is mathematics used in shoemaking?

List three (3) areas of mathematics that a shoemaker must consider when making a pair of shoes.

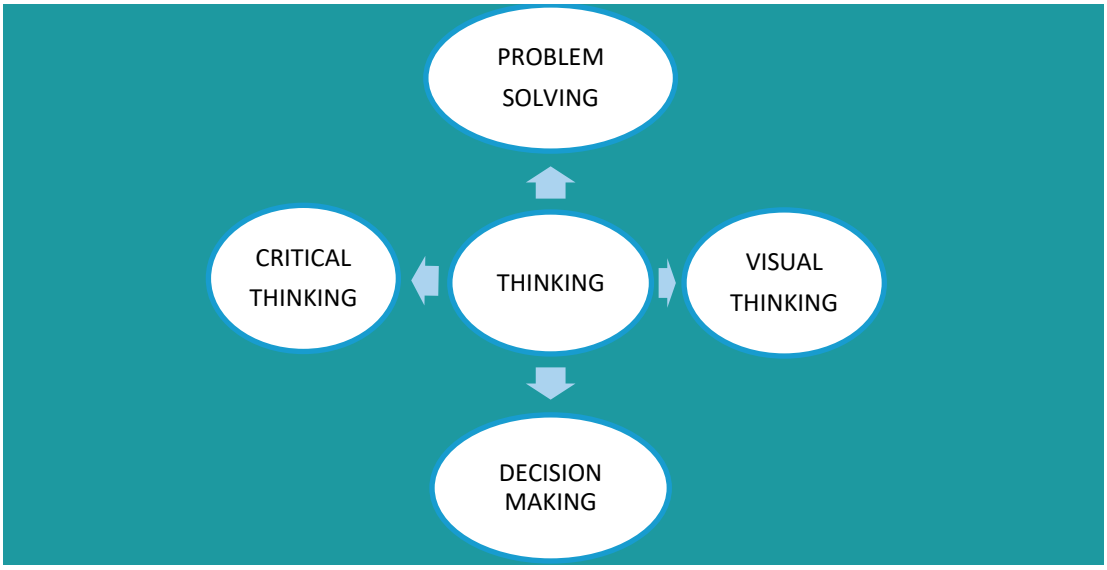
Identify the unit of measure used in shoemaking.

Did you know that the top 5 most common materials used in shoemaking are:

1. leather
2. textile/fabric
3. synthetics
4. rubber
5. foam



The four (4) types of Mathematical thinking



CRITICAL THINKING

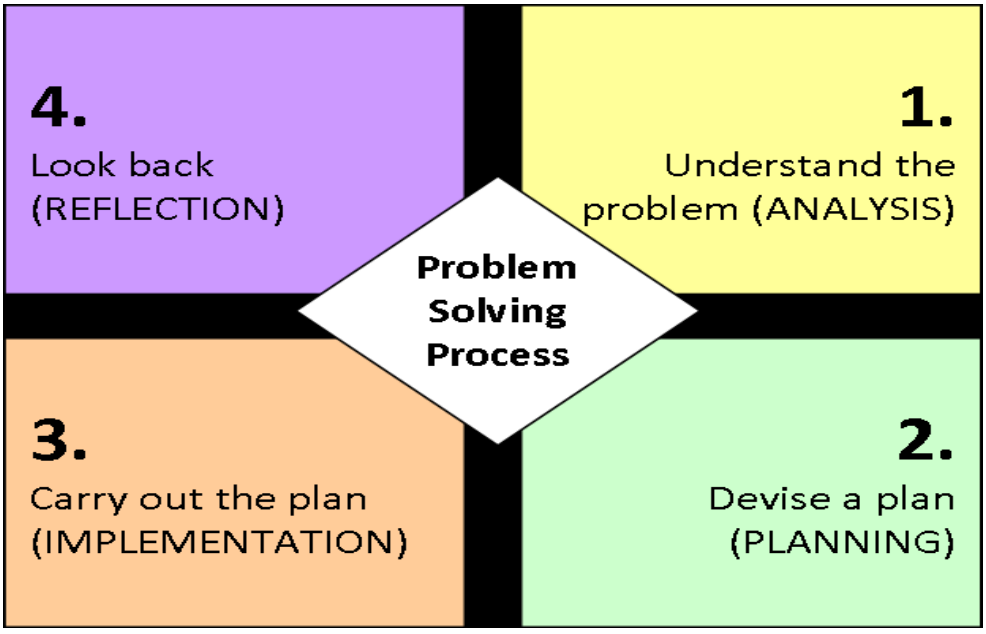
Here are the questions to help thinking critically:



- What do you know?
- What do you need to know?
- What are important thinking strategies you can use.
- Which strategies did you use and why?
- How well did the strategies work?

PROBLEM SOLVING: NON-ROUTINE

Some problems are complex and there are many ways to solve them. These problems will require you to use your creative thinking skill. Some of the steps involved are shown below.



VISUAL THINKING

Visual Thinking?

This is about:

- Thoughts in the form of images or pictures
- Communicating using symbols, shapes, key words to convey meaning



DECISION MAKING

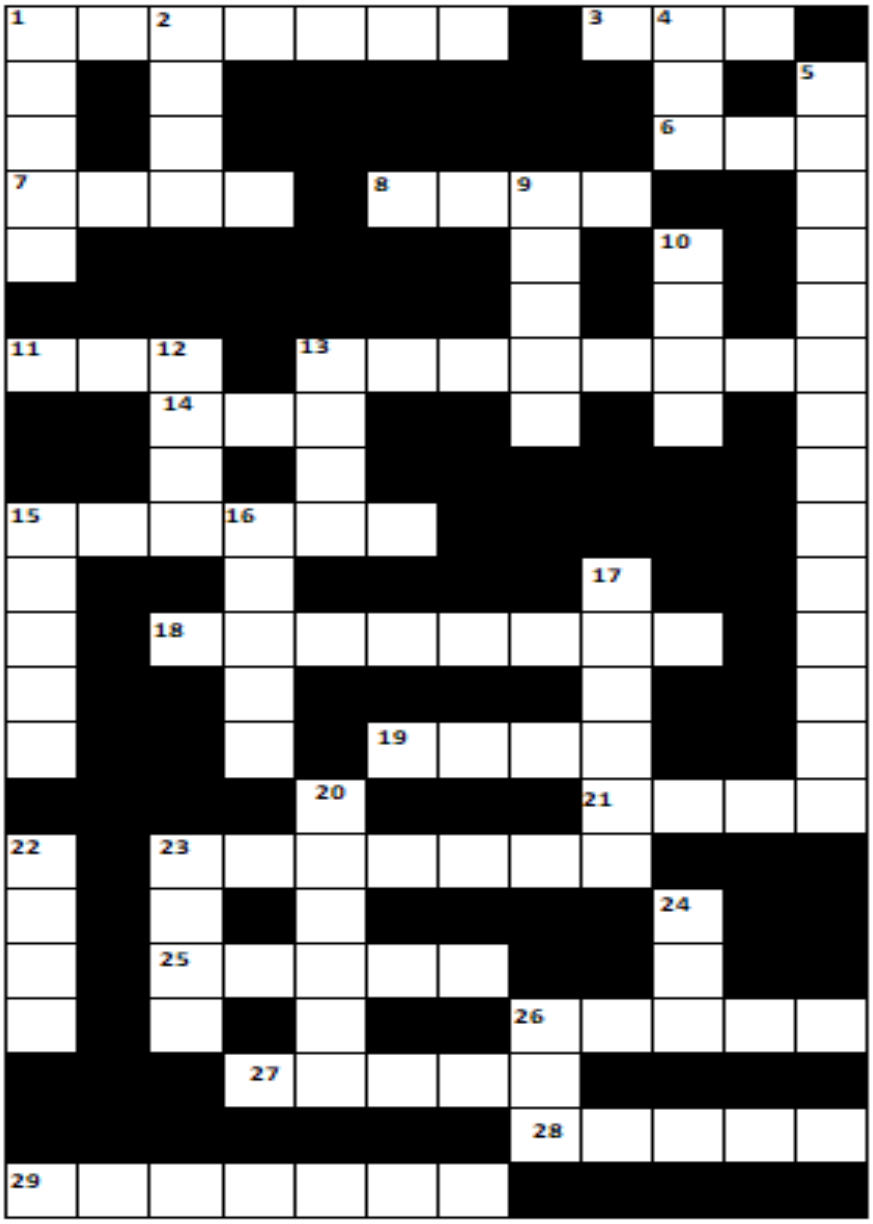
Decision making is concerned with making choices to achieve goals. There is usually **NO clearly right or clearly wrong answers.**



<u>Below are questions that will help you in making decisions:</u>

Step 1: What is the decision you have to make?
Step 2: What information do you have to gather and how will you do so?
Step 3: What options or choices do you have?
Step 4: Which is the best option?
Step 5: How will you use the option you have chosen?
Step 6: What is the result of acting on the decision?

Mathematics Cross-Word Puzzle



ACROSS	DOWN
1. Refers to mean, mode, or median.	1. The amount of turning; measured in degrees.
3. Whole numbers ending with 1, 3, 5, 7, or 9.	2. Not odd.
6. 26^{th}, 15^{th} and 15^{th} letters of the alphabet.	4. The abbreviation for dozen.
7. Made of a set of points, which is extended in opposite directions infinitely.	5. To match.
8. Flat surface of a solid shape.	9. Straight line joining the ends of an arc of the circle
11. Adding two or more numbers or terms.	10. The product of 3 and 3.
13. Gives the direction of a travelling object; measured in degrees.	12. An average value.

14. A period of time.	13. Bottom line or surface of a figure.
15. To simplify a fraction.	15. Happens in a pattern.
18. To add a number to itself a given number of times.	16. To number.
19. The amount of material contained in an object.	17. Not an opened path.
21. Line segment where two faces meet.	20. 3 and 5 are ___ of 15.
23. A quadrilateral	22. An imperial measure.
25. Equal or similar in some way.	23. Special type of shape; like a roof top.
26. 8 is the third ____ of 2.	24. Opposite of column.
27. A number with only two factors.	26. Means each
28. Difference between the highest and lowest values in a set of numbers.	
29. The result of two or more numbers multiplied together.	

Linking Mathematics to Categories of Ability Assessment

Grade 4 Mathematics Content

Strand	Categories of Ability
Number • Sets • Number value • Fraction ideas • Estimation and mental calculation • Multiplication and division of whole numbers (up to 4 digits) including mental calculation. • Decimal	❖ Pattern: number (whole, fraction, decimal); ❖ Comparing numbers; ❖ Estimation and approximation; ❖ Problem solving (worded and real life situations. Please note that verbal categories such as analogies, classification, sequencing/ordering and logical deduction are applicable in the mathematics class. These help to build the language of mathematics as well as promote the processing of information. Puzzles and games are essentials tools to improve students' thinking.

Strand	Categories of Ability
Measurement • Units of measure. • Computing with units of measure. • Computing with length and area. • Estimating and comparing with measures.	❖ Comparing quantities; ❖ Approximation and estimation; ❖ Problem solving; ❖ Logical deduction; ❖ Analogy; ❖ Sequencing/ordering; ❖ Classification.

Strand	Categories of Ability
Geometry • Relationships between lines and angles. • Lines of symmetry. • Similarities and differences in shapes.	❖ Comparing; ❖ Pattern (geometric); ❖ Classification; ❖ Sequencing/ordering; ❖ Analogies; ❖ Logical deduction. The use of tangram pieces and jigsaws are essential.

Strand	Categories of Ability
Algebra • Using variables	❖ Pattern(block, coins, squares, counters); ❖ Shape sequence; ❖ Problem solving; ❖ Comparing.

Strand	Categories of Ability
Statistics and Probability • Collect, organize, interpret and display information. • Mean • Sampling population • Outcomes of an event	❖ Pattern; ❖ Data analysis; ❖ Collecting; ❖ Predicting; ❖ Comparing; ❖ Classification; ❖ Representing; ❖ Logical deduction; ❖ Problem solving; ❖ Interpreting.

Grade 6: Quantitative Reasoning Items

1. Which is the odd word below?
    a) Mean
    b) Mode
    c) Multiple
    d) Median



2. Nine times a variable *x* and five times another variable *y* results in sixty-two. What pair of values of *x* and *y* will satisfy the expression?
    a) *x = 9 and y = 5*
    b) *x = 5 and y = 9*
    c) *x = 4 and y = 5*
    d) *x = 3 and y = 7*

3. Imagine a flag with three vertical stripes, one red, one white and one blue. How many different flags can you imagine without repeating the colours?
    a) 12
    b) 6
    c) 3
    d) 1



4. Imagine some coloured blocks are laid out in a row: three red, two blue, three red, two blue and so on. How many blocks will be in the 9th position?
    a) 3 red blocks
    b) 2 blue blocks
    c) 10 blues blocks
    d) 15 red blocks

5. Imagine some coloured blocks are laid out in a row: three red, two blue, three red, two blue and so on. If there are 65 coloured blocks, how many would be red?
    a) 52
    b) 39
    c) 26
    d) 13



6. Likely is to probability as unknown is to:
    a) Measurement
    b) Geometry
    c) Number
    d) Algebra



7. Bob has a Shoe Store, what statistical term should he consider when buying shoes?
    a) Mean
    b) Mode
    c) Multiple
    d) Median

8. Sam scores the following on five of his Mathematics Tests: 95, 80, 90, 90 and 70. His score on the sixth Mathematics Test was 95. Which of the following will not change?
    a) Median
    b) Multiple
    c) Mean
    d) Mode



9. Which number best completes the sequence below?
    100, 81, 64, 49, _____

10. True or False

    All odd numbers end with either 1,3,5,7 or 9 _____

    Outcomes are always fair _____

    Graphs are only used in the mathematics class _____

11. Andre gave the clues about a special number.
    Clues: I am a whole number greater than 60 and less than 70
    I am an even number
    I am a multiple of 8

    What number am I?



12. Sally ran 2 Kilometres each day for 4 days. Then she ran 3 Kilometres each day for the next 4 days. How many Kilometres did Sally run altogether in the 8 days?
    a) 12
    b) 17
    c) 20
    d) 24

13. At which point is $\frac{3}{4}$ located on the number line?



    a) P
    b) Q
    c) R
    d) T

14. A trendy new shoe design is out on the market. Mr. Brown, the storekeeper is very cautious. He doesn't want to invest too heavily on this new design. A wholesale dealer will allow Mr. Brown to purchase one size of this new shoe at a reduced price for a special promotion. The following shoe sizes were collected the last time Mr. Brown had a special sale ……

    $9,\ 7,\ 7,\ 8,\ 7, 11, 7, 7\frac{1}{2},\ 10\frac{1}{2}, 12,\ 8\frac{1}{2}, 6, 10, 8, 7, 10\frac{1}{2}, 9, 7.$

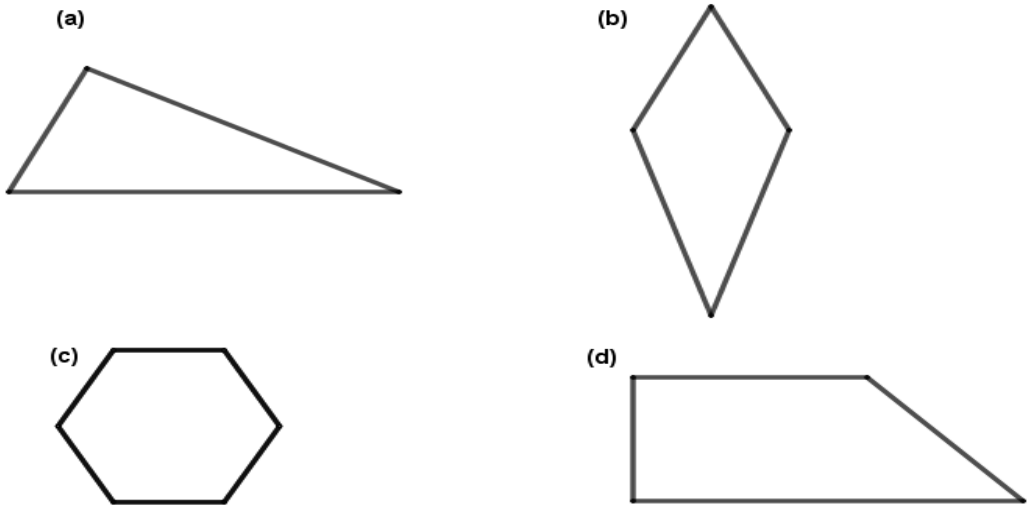
    a) Determine which arithmetic average Mr. Brown should use to make the best selection of shoe sizes.

    b) Write a statement to justify your choice.

    c) Display your results in the graphic form that is best suited for defending your decision.

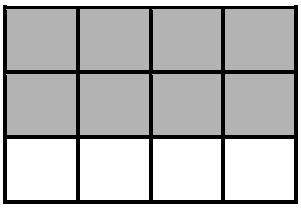


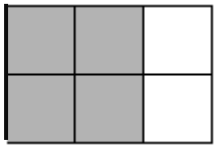
15. Which figure has at least: one acute angle, one obtuse angle, and one right angle?



16. Which list contains ***exactly*** 2 prime numbers and 2 composite numbers?
    a) 13, 14, 15, 16
    b) 2, 4, 5, 6
    c) 7, 8, 9, 10
    d) 25, 26, 27, 29

17. What fraction is shaded in each of these models?





A $\frac{2}{3}$

B $\frac{3}{4}$

C $\frac{2}{6}$

D $\frac{4}{8}$



18. The number of students enrolled at Hamilton's Primary School is as follows:

Year	2010	2011	2012	2013
Number of Students	50	85	120	155

This pattern has been continuing every year thereafter.

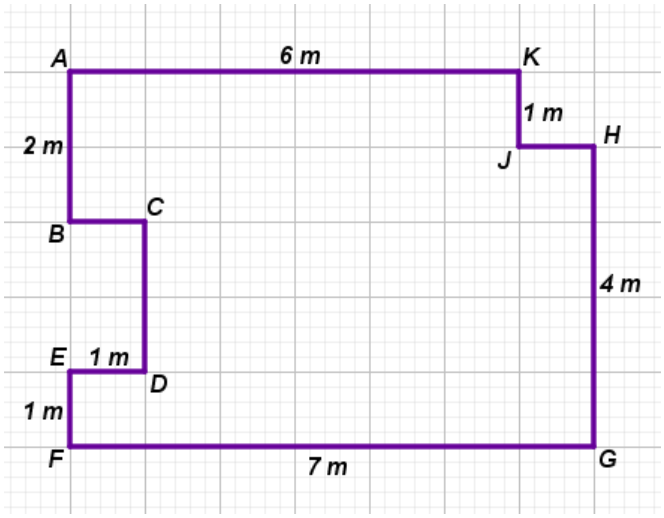
a) How many students were expected to be enrolled in the year 2015?

b) How many students were expected to be enrolled in the year 2018?

c) How many students were expected to be enrolled in the year 2022?

d) What was the average number of students enrolled between 2010 and 2012 inclusively?

19. The Thompson's want to put outdoor tiles on their porch. The diagram represents the section of the porch.



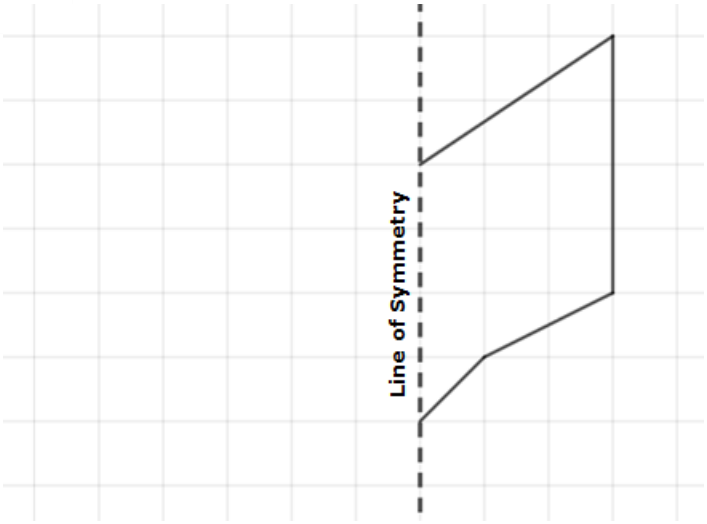
a) Using 1 unit to represent the length of each square tile, how many tiles are needed to cover the whole porch?

b) A piece of string is placed on the border of the porch. What is the length of the piece of string?

c) What measuring equipment do you need to find the above measures?

d) What is the difference between the number of tiles for the whole porch and those found on the borders?

20. The diagram below shows the line of symmetry and one half of an incomplete polygon.



(a) Using the line of symmetry, complete the drawing of the polygon.

(b) What is the name of the polygon formed?

PROCESS STRAND SCOPE AND SEQUENCE
2021 Version

Mathematical Processes

Problem – Solving Skills	Pre – K	K	1	2	3	4	5	6
Using a problem-solving plan					*	*	*	*
Use data from a picture, graph, table		*	*	*	*	*	*	*
Choose an operation		*	*	*	*	*	*	*
Multiple-step problems			*	*	*	*	*	*
Extra or missing information			*	*	*	*	*	*
Exact answer or estimate			*	*	*	*	*	*
Interpreting remainders					*	*	*	*
Translating words to expressions				*	*	*	*	*
Writing to explain					*	*	*	*
Writing to describe					*	*	*	*
Writing to compare					*	*	*	*
Using a calculator or computer			*	*	*	*	*	*

Problem – Solving Strategies	Pre – K	K	1	2	3	4	5	6
Act it out, use objects, do simulations	*	*	*	*	*	*	*	*
Draw a picture		*	*	*	*	*	*	*
Use logical reasoning		*	*	*	*	*	*	*
Try, check, and revise		*	*	*	*	*	*	*
Look for a pattern	*	*	*	*	*	*	*	*
Make an organized list		*	*	*	*	*	*	*
Make a table		*	*	*	*	*	*	*
Make a graph		*	*	*	*	*	*	*
Solve a simpler problem					*	*	*	*
Work backward					*	*	*	*
Write a number sentence/equation/proportion		*	*	*	*	*	*	*
Choose a strategy					*	*	*	*
Using multiple strategies					*	*	*	*

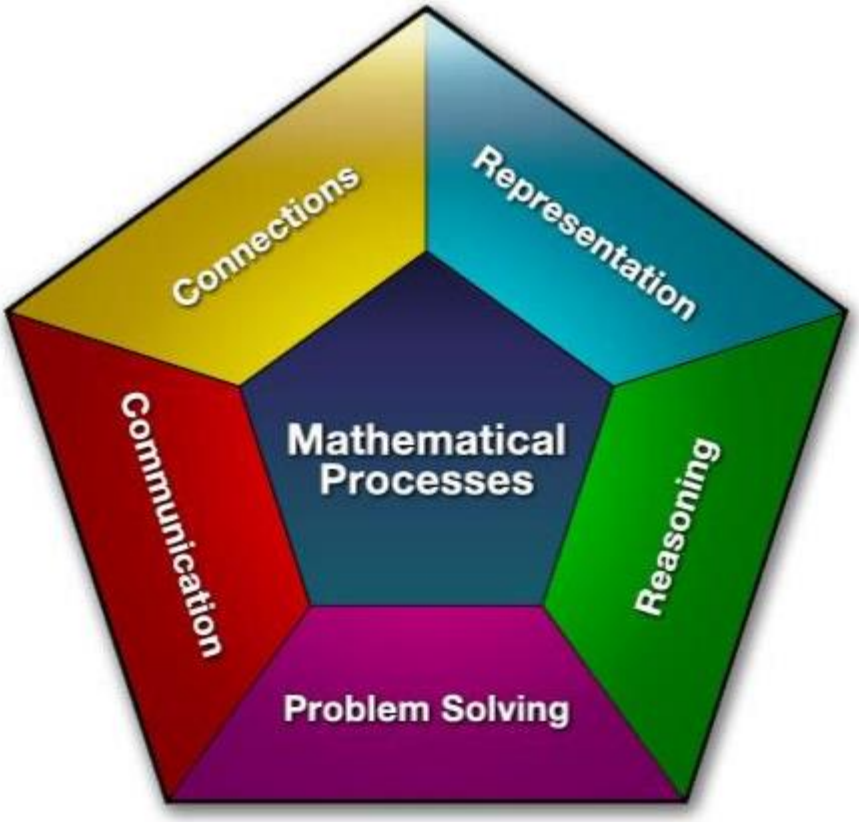
Reasoning and Proof	Pre – K	K	1	2	3	4	5	6
Logical reasoning								
Comparing/contrasting	*	*	*	*	*	*	*	*
Classifying/sorting/Venn diagrams	*	*	*	*	*	*	*	*
Finding/extending/using patterns	*	*	*	*	*	*	*	*
Making connections	*	*	*	*	*	*	*	*
Making generalizations			*	*	*	*	*	*
Drawing conclusions and evaluating arguments		*	*	*	*	*	*	*
Making/testing conjectures			*	*	*	*	*	*
Explaining/justifying answer/checking for reasonables			*	*	*	*	*	*
Visual and creative thinking								
Visual patterns/spatial reasoning	*	*	*	*	*	*	*	*
Solving non-routine problems		*	*	*	*	*	*	*
Generating problems			*	*	*	*	*	*

Connections	Pre – K	K	1	2	3	4	5	6
Curriculum connections to other subjects		*	*	*	*	*	*	*
Connections among mathematical ideas	*	*	*	*	*	*	*	*
Real-world connections								
Students' daily lives	*	*	*	*	*	*	*	*
Consumer					*	*	*	*
Career					*	*	*	*
Multicultural connections		*	*	*	*	*	*	*
Connections using technology			*	*	*	*	*	*

Communication	Pre – K	K	1	2	3	4	5	6
Writing to explain					*	*	*	*
Writing to compare					*	*	*	*
Writing to describe					*	*	*	*
Reading for math success/reading assists/math language		*	*	*	*	*	*	*
Write about it/journal					*	*	*	*
Talk about it/share	*	*	*	*	*	*	*	*
Working in cooperative groups	*	*	*	*	*	*	*	*
Writing convincing arguments using mathematical ideas			*	*	*	*	*	*

Representation	Pre – K	K	1	2	3	4	5	6
Concrete/pictorial and number-line models for whole numbers	*	*	*	*	*	*	*	
Integers on a number line						*	*	
Whole-number addition/subtractions using concrete/pictorial models	*	*	*	*	*	*	*	*
Whole-number multiplication/division using concrete/pictorial models				*	*	*	*	*
Integer computation using pictorial or number-line models						*	*	*
Concrete/pictorial models for part of a whole/set		*	*	*	*	*	*	*
Fractions on a number line					*	*	*	*
Fraction operations using pictorial models					*	*	*	*
Dividing whole numbers by fractions using pictorial models							*	*
Pictorial model for decimals					*	*	*	*
Decimals on a number line						*	*	*
Decimal operations using pictorial models					*	*	*	*
Integer operations using pictorial or number-line models							*	*
Ratio, proportion, percent models							*	*
Proportions related to maps and scale drawings							*	*
Counting units to find length, area, volume		*	*	*	*	*	*	*
Geometric models for real-world situations		*	*	*	*	*	*	*
Making graphs/charts/tables/diagrams	*	*	*	*	*	*	*	*
Models for equations (algebra tiles, two-color counters)						*	*	*
Solving problems by drawing a picture/diagram		*	*	*	*	*	*	*
Number sentences and equations to model real situations		*	*	*	*	*	*	*

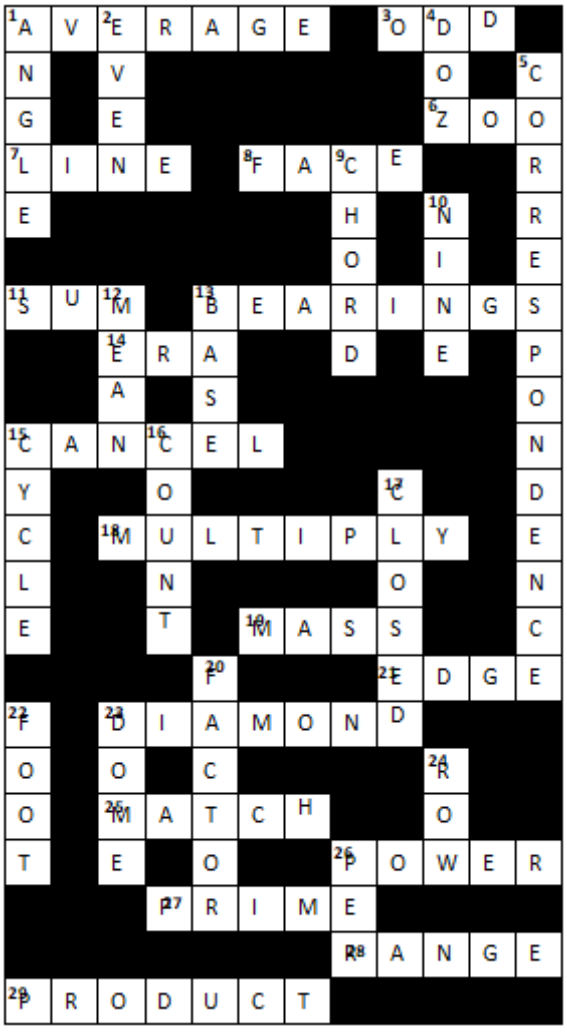
MATHEMATICAL PROCESSES



Solution Set for Grade 6 Mathematics Items

Question Number	Solution	Question Number	Solution
1.	Multiple	**2.**	x = 3 and y = 7
3.	6	**4**	3 red blocks
5.	39	**6.**	Algebra
7.	Mode	**8.**	Median
9.	36	**10.**	True, False, False
11.	64	**12.**	20 Km
13.	R	**14.**	Mode, ------, Bar chart
15.	Trapezium	**16.**	2, 4, 5, 6
17.	2/3	**18.**	225, 330, 470, 85
19.	32, 26 m, ------, 32 – 19=13	**20**	Octagon

Solution Set for Mathematics Cross-Word Puzzle



MATHEMATICS WORD SEARCH

Can you find them all!! Look in all directions, left to right, right to left, up and down, on the diagonal.

E	G	N	A	I	R	T	A	V	E	R	A	G	E	T	C	D	C	C	S
X	O	T	R	I	A	N	D	J	O	I	N	T	R	S	O	E	A	E	C
D	D	O	M	E	Z	W	D	E	C	I	M	A	L	P	M	G	T	R	O
N	I	N	E	S	H	O	I	E	H	F	H	O	R	A	P	R	E	T	R
A	C	N	O	S	U	B	T	R	A	C	T	I	O	N	O	E	G	A	E
S	O	E	L	B	K	M	I	R	R	Y	M	O	N	E	S	A	O	I	E
U	L	X	L	F	A	B	O	R	P	E	I	P	G	V	I	O	R	N	L
O	U	E	E	M		R	N	U	M	B	E	R	O	E	T	L	Y	C	U
H	M	P	Y	Y	E	A	R	X	A	O	R	O	Z	I	E	S	Y	Y	R
T	N	A	X	E	V	Y	B	A	N	L	D	D	E	X	E	C	T	L	E
I	Y	V	P	B	I	S	L	A	Y	V	I	U	R	U	T	H	M	I	T
E	L	F	A	C	T	O	R	S	A	G	C	C	O	B	A	O	X	N	E
D	K	W	U	D	I	G	A	M	H	P	E	T	B	H	M	R	I	D	M
I	Q	B	I	X	S	Y	M	B	O	L	C	R	A	Q	I	D	H	E	I
V	E	V	W	H	O	L	E	N	U	M	B	E	R	S	T	K	C	R	R
I	I	N	K	Y	P	O	W	E	R	S	E	V	E	N	S	E	E	R	E
D	A	T	A	C	U	T	E	T	O	E	G	A	T	N	E	C	R	E	P

Acute	Cube	Many	Product	Tonne
Addition	Cylinder	Net	Ray	Whole numbers
Apex	Data	Nine	Rule	Year
Array	Dice	Number	Score	Zero
Average	Divide	Odd	Set	
Bar	Dome	Percentage	Seven	
Category	Double	Perimeter	Span	
Chart	Even	Place value	Subtraction	
Chord	Factors	Positive	Sum	
Column	Hour	Powers	Symbol	
Composite	Join	Prime	Thousand	

This, therefore, is mathematics:
She reminds you of the invisible forms of the soul;
she gives life to her own discoveries;
she awakens the mind and purifies the intellect;
she brings to light our intrinsic ideas; she abolishes oblivion and ignorance which are ours by birth