

PSLE MATHEMATICS

PSLE Mathematics Examination Format

The examination consists of two written papers comprising three booklets.

Paper	Booklet	Item Type	Number of Questions	Number of marks per question	Weighting	Duration
1	A	Multiple-choice	10	1	10%	50 min
			5	2	10%	
	B	Short Answer	10	1	10%	
			5	2	10%	
2		Short-answer	5	2	10%	1 h 40 min
		Structured/Long-answer	13	3,4,5	50%	
Total			48	-	100%	2 h 30 min

- Notes**
- Both papers will be scheduled on the same day with a break between the two papers.
 - Paper 1 comprises two booklets. The use of calculators is not allowed.
 - Paper 2 comprises one booklet. The use of calculators is allowed.

Item Types

Multiple-choice Question

For each question, four options are provided, of which only one is the correct answer. A candidate has to choose one of the options as his correct answer.

Short-answer Question

For each question, a candidate has to write his answer in the space provided. Any unit required in an answer is provided and a candidate has to give his answer in that unit.

Structured / Long-answer Question

For each question, a candidate has to show his method of solution (working steps) clearly and write his answer(s) in the space(s) provided.

PREPARING MYSELF FOR PSLE MATHEMATICS

The PSLE Mathematics paper consists of 3 different levels of questions, namely Knowledge, Comprehension, and Analytical and Application type questions.

Knowledge Questions

These are usually straightforward questions which require the pupils to recall mathematical facts and concepts. It could involve one or two steps. These are usually the one-mark questions (Q1-10 and Q16-25 of Paper 1).

Example 1
Amilia paid for a 65-cent ruler with a \$2-note. How much change did she receive?

Example 2
Express 0.015 as a percentage.

Comprehension Questions

These are questions which require the pupils to interpret data and apply mathematical concepts to solve routine mathematical problems. Routine mathematical problems are word problems that pupils have been exposed to usually in their activity and assessment books. These questions are usually ranged from 25% to 40% of the whole paper.

Example 1:
Michael had 30% as many erasers as Julie at first. Michael lost 5 erasers and Julie gave 36 erasers away. In the end, Michael had as many erasers as Julie. How many erasers did Michael have at first?

Application and Analytical Questions

These are questions which require the pupils to interpret data and apply mathematical concepts to solve non-routine and challenging mathematical problems. These questions are usually ranged from 25% -40% of the whole paper.

Example 1:
A square paper as shown in Figure 1 has an area of 324 cm^2 . It is then cut into 2 pieces and the two pieces are arranged to form a rectangle as shown in Figure 2. Find the perimeter of the rectangle.

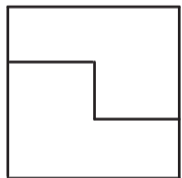


Figure 1

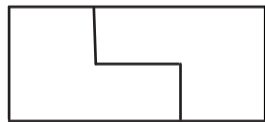


Figure 2

Avoid careless mistakes especially in Knowledge and Comprehension Questions.

EXAMINATION TIPS

1. Readiness

A. Quality Practice, not Quantity Practice

Doing lots and lots of practice without reflecting will not improve your performance. In fact, it will cultivate bad habits if you keep repeating the mistakes without even realising it. Hence, for each word problem that you have completed, reflect on your solutions. Ask yourself if there is another efficient way of doing this or could I apply this method in another question. Although this is time consuming, it is actually quality time well spent.

B. It's never too late to start. Better be prepared than never.

You have seen your classmates or your friends starting their preparation as early as last year. Do not be alarmed. In fact it is good that you know that you need to start now. Never say to yourself that you will start tomorrow as that day will never come!

C. Multiple Approaches to Problem Solving (MAPS)

Every method has its limitations. Hence do not depend on just one method eg Model Drawing to solve word problem. Master the different approaches such as one Unit Transfer Method and Picture Representation.

2. C-P-R Approach

A. Confident, Positive and Relax Approach

Be confident and positive prior to the exam especially when you are well-prepared. Avoid having negative thoughts. Instead, approach each question as a challenge.

B. At all times during the exam, stay relaxed and calm especially when you come across a question that you have never seen before. Use the Polya's 4-step for problem solving (*). Always have belief in your own ability.

3. Time Management

A. Time is a crucial factor for both Paper 1 and 2.

For paper 1, there are 30 questions to be completed. Hence, move on to the next question if you still do not understand the question after one minute. Do keep track of the time.

For paper 2, there are 18 questions to be completed in 1 hr 40 mins. Move on to the next question if you still do not understand the question after 3 minutes.

B. Do not be affected by questions you cannot solve.

Always start afresh for every question. If you still keep thinking about the previous question, close your eyes and control your breathing. Open your eyes again and read the next question.

4. Upon completion of the paper

A. Do not waste time by circling and counting the marks for questions you could solve. This action will not help you get extra marks. Instead use the time to check thoroughly your solutions.

B. Do not take a nap as you felt that you have done your very best and deserve a short break. Instead you should use every second given to you to check thoroughly your paper. Do not let complacency **destroy** your hard work of 6 years.

5. Checking the solutions

A. Checking the solutions does not mean just flipping the papers.

B. Pupils tend to make numerous errors especially when transferring the value in the calculator onto the paper. Compute all calculations again.

C. Ensure all units are present in the final answer.

D. Remember to include the degree symbol in your solutions for questions involving angles.
Example: 43°

E. Take note of questions that require you to correct your final answer to specific decimal places or to simplest form.
Example: Correct your answer to 2 decimal places - $56.7853 \approx 56.79$

F. Take note of questions that involve circles. If the value of π is not given, you are expected to use the value of π in the calculator.

G. After your paper, avoid discussing your solutions with your friend. Instead, you should focus on your next paper.

* Examination Strategies

Apply the Polya's 4-steps for Problem Solving

1. Understand the problem

Do not read the problem but understand it too. Understand means to interpret the data or information found in the question. The interpretation of Mathematical Language is very crucial. The use of picture or model to elaborate understanding together with the interpretation of data is the key to this first step.

2. Devise a plan

Pupils should already be equipped with numerous strategies by their teachers prior to the exam. However, if pupils want to achieve good grades in their result, they need to choose not just a strategy that they are good at (eg. Guess and Check) but more importantly an efficient one as time is a crucial factor.

3. Carry out the Plan

Write proper mathematical statements in an organized manner. Develop this habit during your practice as method marks will be awarded. Avoid doing your workings in your calculator first. You should use your calculator to help you in your computation.

4. Reflect your answer

Analyse your final answer. Does it make sense? Is it too big or too small? During your practice, it is very important for you not just to reflect on your answer but on your solution as well. Ask yourself if the method could be used in other questions or you could use another method to solve this question. This is quality practice.

Let's Apply the Polya's 4-steps for Problem Solving in these 2 examples:

Paper 1 / Booklet A

Sample Question 1

There are $\frac{3}{5}$ as many boys as girls in the hall. What fraction of the pupils at the funfair are girls? (1 mark)

(1) $\frac{1}{4}$

(2) $\frac{3}{8}$

(3) $\frac{2}{5}$

(4) $\frac{5}{8}$

Answer: (4)

Working / Explanation

There are $\frac{3}{5}$ as many boys as girls in the hall.
Using Mathematical Language,
Boys \rightarrow 3 units
Girls \rightarrow 5 units

Understand the problem

What fraction of the pupils at the funfair are girls?

Devise a plan

Key words are **fraction, of and girls.**

Since my answer must be in fraction, I must have a numerator and denominator. The noun just after the word 'of' is the denominator. Hence 'girls', which is the other noun in the statement, must be the numerator.

numerator \rightarrow girls \rightarrow 5
denominator \rightarrow pupils \rightarrow 8

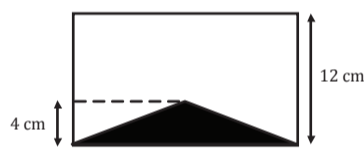
Carry out the plan

Reflect on the answer

I do not have the digit 3 as part of my answer as 3 units belong to the number of boys. Since my answer is in fraction, I have to ensure that it is in simplest form.

Sample Question 2

The figure below shows a rectangle. If the height of the rectangle is thrice the height of the triangle, what fraction of the rectangle is shaded? (2 Marks)



(1) $\frac{1}{5}$

(2) $\frac{1}{6}$

(3) $\frac{1}{3}$

(4) $\frac{1}{4}$

Answer: (2)

Working / Explanation

Understand the problem

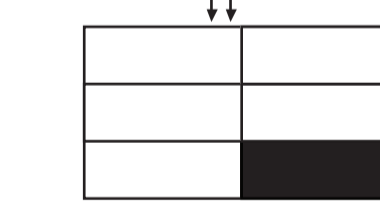
Base of triangle and the length of the rectangle are not stated. However, based on the diagram both are equal as the base of the triangle is the length of the rectangle. Main concept of triangle is area of triangle is half the area of rectangle.

Devise a plan

Since height of the rectangle is thrice the height of the triangle, I can simply draw another two rectangles of height 4 cm as shown below.



Carry out the plan



Reflect on the answer

Suppose the base of the triangle is 10cm, then shaded area is 20 cm^2 which is one-sixth of the rectangle of 120 cm^2

Paper 1 / Booklet B

Sample Question 3

$40 \div 1000 = \underline{\hspace{2cm}}$

(1 Mark)

Answer: 0.04

Since it is divided by 1000, we need to shift the decimal point 3 places to the left.

Common error: Avoid performing long division as you tend to put the larger number in the division house as shown below.

$40 \overline{)1000} \rightarrow x$

Sample Question 4

Find the value of $4 + 11 + 18 + \dots + 403 + 410 + 417$

(2 Marks)

Answer: 12630

Working / Explanation

Do take note that in this section, the use of calculator is not allowed. Hence it is not feasible to add from 4 all the way to 417. Pair up the first with the last, second with the second from last as shown below. You will get pairs which have the sum of 421.

$4 + 417 = 421$
 $11 + 410 = 421$

However, how many pairs are there?

To find how many pairs, observe the pattern. Each number is increased by 7. Using the concept of multiplication which is repeated addition, this set of numbers is actually repeated addition of 7. Add each number by 3 and you will get

$7 + 14 + 21 + \dots + 406 + 413 + 420$

To find how many numbers there are, simply divide 420 by 7 which is 60. Since there are 60 numbers, there should be 30 pairs.

Hence, $421 \times 30 = 12630$ ----- M1, A1

Paper 2

Sample Question 5

William had some red beads and blue beads in the ratio 2:3. After buying 40 more blue beads, the ratio became 1:4. How many red beads had he? (3 Marks)

Working / Explanation

Put all the information in table form.

	red beads	blue beads
Before	2 units	3 units
Change		+ 40
After		4 parts

This is a Before- Change - After Concept.

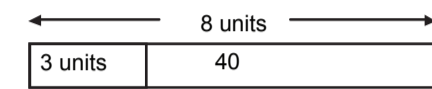
When doing a BCA concept, always ask these 2 questions.

Do you know the before and after ratio? If yes, ask this question.

What remain the same (Total, Difference, Identity or all variables)?

In this case, number of red beads remains the same, hence identity of red beads is the same before and after the change.

	red beads	blue beads
Before	2 units	3 units
Change		+ 40
After	1 part = 2 units	4 parts = 8 units = 3 units + 40



$5 \text{ units} \rightarrow 40$ ----- M1

$1 \text{ unit} \rightarrow 8$

$2 \text{ units} \rightarrow 16$ ----- M1, A1

Answer: 16

Sample Question 6

Fady had some marbles. $\frac{2}{7}$ of them were white marbles and the rest were black marbles. He gave 144 white marbles to his neighbour and $\frac{2}{3}$ of the black marbles to his best friend. Given that he had $\frac{1}{3}$ of the marbles left, how many marbles did Fady give away altogether? (5 marks)

Working / Explanation

$\frac{2}{7}$ of them were white marbles.

White marbles \rightarrow 2 parts

Black marbles \rightarrow 5 parts

$\frac{2}{3}$ of the black marbles to his best friend.

Since the number of black marbles are divisible by 3, we change 5 parts to 15 parts instead.

Hence, we change them proportionally.

White marbles \rightarrow 6 parts

Black marbles \rightarrow 15 parts

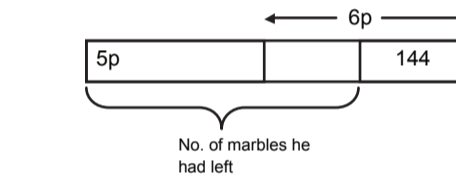
Put all information in table form.

	White	Black
Before	6p	15p
Change	-144	-10p
Left	6p - 144	5p

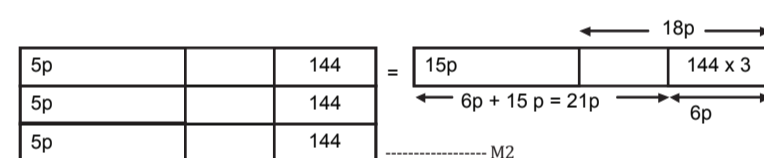
This is a Before - Change - After Concept.

When doing a BCA concept, always ask this question first.

Do you know the before and after ratio? If no, proceed to drawing the model



Since he had $\frac{1}{3}$ of his marbles left, we include another two sets to illustrate the model he had at first



$1p \rightarrow 36$

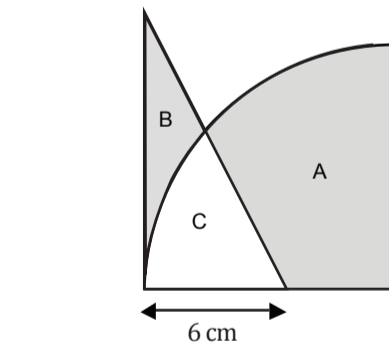
$10p \rightarrow 360$ (No. of black marbles given away) ----- M1

$360 + 144 = 504$ ----- M1, A1

Answer: 504

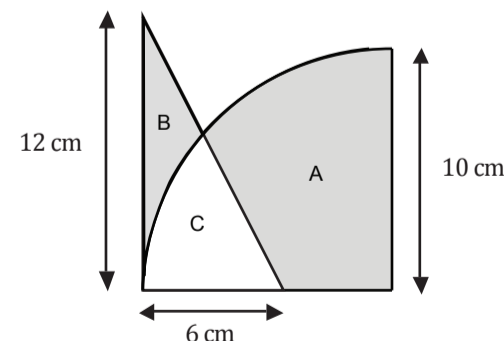
Sample Question 7

The figure below consists of a quadrant and a right-angled triangle whose height is 12 cm. Given that the radius of the quadrant is 10 cm, find the difference between the two shaded areas A and B. Correct to two decimal places. (4 marks)



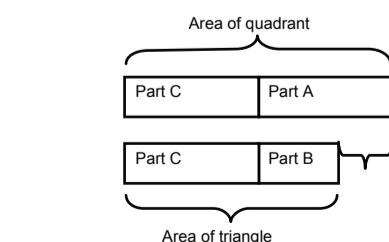
Working / Explanation

Include all the information given in the word problem into the diagram



Part A is not a regular shape. To make it a regular shape (quadrant) part C must be added. Similarly Part B is not a regular shape. To make it a regular shape (triangle) part C must be added.

Since in both cases, part C is added to make regular shapes, difference between A and B remains the same. Concept involved here is constant difference.



Area of quadrant = $\frac{1}{4} \times \pi \times 10 \text{ cm} \times 10 \text{ cm} = 25\pi \text{ cm}^2$ ----- M1

Area of triangle = $\frac{1}{2} \times 12 \text{ cm} \times 6 \text{ cm} = 36 \text{ cm}^2$ ----- M1

Difference in area = $25\pi \text{ cm}^2 - 36 \text{ cm}^2 \approx 42.54 \text{ cm}^2$ ----- M1, A1

Answer: 42.54 cm^2