

PRELIMINARY PRACTICE PAPER

Mathematics

Practice paper 1 · Paper 1 and Paper 2 · 45 questions · 100 marks · 2 h 30 min

Name: _____

Class: _____

Date: _____

Answer all questions. Write your answers in this booklet. Paper 1: do not use a calculator. 1 h 10 min, 50 marks. Paper 2: you may use a calculator. 1 h 20 min, 50 marks. Assembled by Holy Grail (grail.moe) from 2019 to 2025 preliminary examination questions, set out in the 2026 SEAB format.

Paper 1 Booklet A

Choose the correct answer (1), (2), (3) or (4).

1. Which fraction is greater than $\frac{1}{3}$? [1 mark]

(1) $\frac{2}{5}$ (2) $\frac{2}{6}$ (3) $\frac{3}{10}$ (4) $\frac{3}{11}$

2. The ratio of Hassan's age to Meng Li's age is 3 : 8. What fraction of their total age is Meng Li's age? [1 mark]

(1) $\frac{3}{11}$ (2) $\frac{3}{8}$ (3) $\frac{8}{11}$ (4) $\frac{8}{3}$

3. Express 1.7 as a percentage. [1 mark]

(1) 0.017 % (2) 0.17 % (3) 17 % (4) 170 %

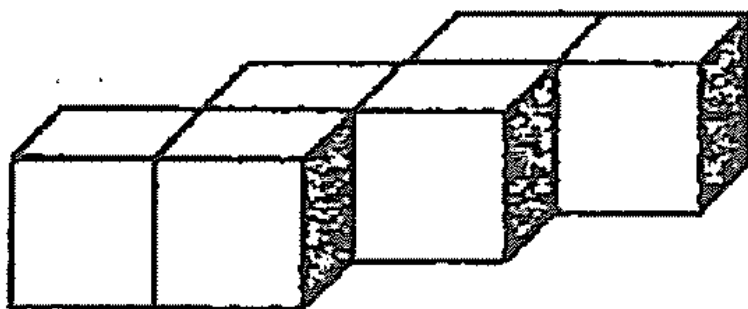
4. Round 4.195 to 2 decimal places. [1 mark]

(1) 4.10 (2) 4.19 (3) 4.20 (4) 4.29

5. A machine can produce 80 cans in 3 minutes. At this rate, how many cans can it produce in 2 hours? [1 mark]

(1) 1600 (2) 3200 (3) 4800 (4) 9600

6. The solid shown is made up of 2-cm cubes. Find its volume. [1 mark]

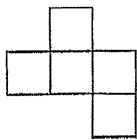


(1) 12 cm³ (2) 24 cm³ (3) 36 cm³ (4) 48 cm³

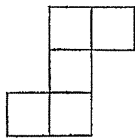
7. The semicircle below has a diameter of 20 cm. Find the area of the semicircle. (Take $\pi = 3.14$) [1 mark]

(1) 31.4 cm^2 (2) 62.8 cm^2 (3) 157 cm^2 (4) 314 cm^2

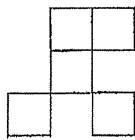
8. Each figure is made up of 5 identical squares. Which one has a line of symmetry? [1 mark]



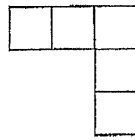
(1)



(2)



(3)



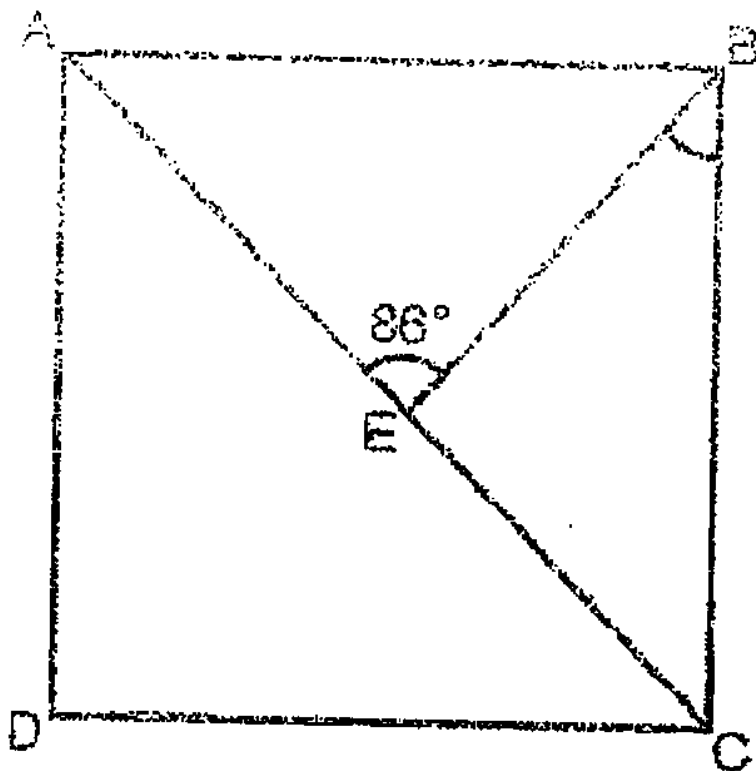
(4)

(1) first figure (2) second figure (3) third figure (4) fourth figure

9. The average of 5 numbers is 30. 4 of the numbers has a total of 96. What is the fifth number? [1 mark]

(1) 30 (2) 44 (3) 54 (4) 66

10. $ABCD$ is a square and $\angle AEB = 86^\circ$, where E is a point on the diagonal AC and BE is drawn. Find $\angle CBE$. [1 mark]

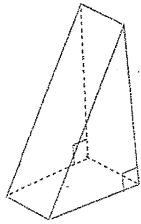


- (1) 41° (2) 43° (3) 45° (4) 49°
11. Peter is 13 years old now. His father is 3 times as old as he. What is their total age in 5 years time? [2 marks]
- (1) 44 years (2) 52 years (3) 57 years (4) 62 years
12. Auntie May had a roll of ribbon, 2 m in length. She used 40 cm to wrap a present and cut the remaining into h pieces. How long is each piece? [2 marks]
- (1) $\frac{240}{h}$ cm (2) $\frac{200-40}{h}$ cm (3) $(\frac{200}{40} \div h)$ cm (4) $(200 - \frac{40}{h})$ cm
13. The figure below shows a cube. The area of the shaded part, which is one face of the cube, is 36 cm^2 . What is the volume of the cube? [2 marks]
- (1) 186 cm^3 (2) 216 cm^3 (3) 324 cm^3 (4) 729 cm^3

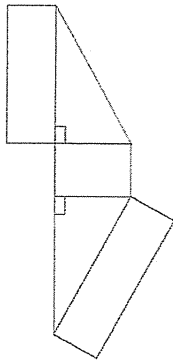
- 14.** The original price of a pair of shoes was \$50. At a sale, Adam was given a 20% discount. [2 marks]
There was a 7% GST on the discounted price of the shoes. How much did Adam pay for the pair of shoes with GST?

(1) \$37.20 (2) \$42.80 (3) \$46.50 (4) \$53.50

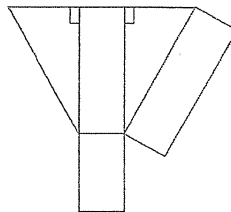
- 15.** The figure below shows a prism. [2 marks]
Which one of the following is a net of the prism?



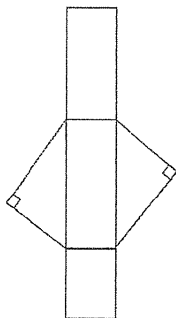
(1)



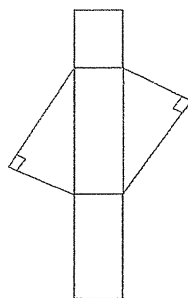
(2)



(3)



(4)



(1) the first net
shown

(2) the second net
shown

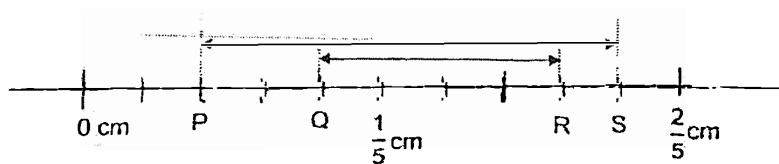
(3) the third net
shown

(4) the fourth net
shown

- 16.** Ali and Zainal each bought the same mass of minced meat. They prepared each patty with [2 marks]
the same mass of minced meat. Ali made 20 patties and had 5.6 kg of minced meat left.
Zainal made 60 patties and had 400 g of minced meat left. What was the mass of minced
meat used for each patty?

(1) 65 g (2) 75 g (3) 130 g (4) 150 g

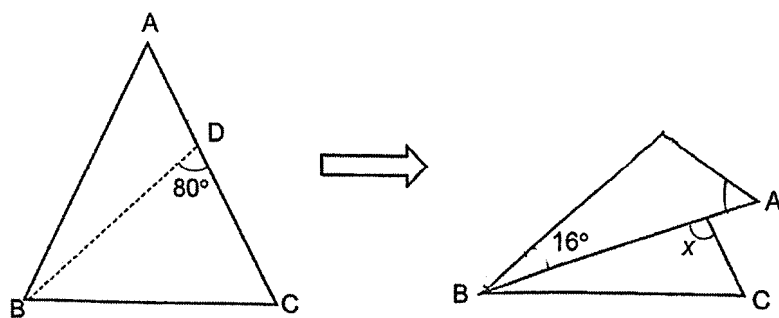
17. In the number line below, what is the difference between the length of PS and the length of QR? [2 marks]



- (1) 0.04 cm (2) 0.08 cm (3) 0.12 cm (4) 0.16 cm

18. A sheet of paper in the shape of an isosceles triangle where $AB = AC$. [2 marks]

It is folded along the dotted line BD as shown below. Find $\angle x$.



- (1) 58° (2) 64° (3) 96° (4) 100°

- 19.** A car travels 270 km on 30 litres of petrol. [2 marks]

(a) How many kilometres can the car travel on 1 litre of petrol?

(b) How much petrol is needed for the car to travel 180 km?

- 20.** What is the sum of all the common factors of 12 and 20? [2 marks]

- 21.** In 1 minute, Machine A can pack 5 boxes of cookies while Machine B can pack 2 boxes of cookies. Both machines started packing at 12.50 a.m. At what time will both machines pack 175 boxes of cookies in total? Leave your answer in 24-hour clock. [2 marks]

- 22.** Arrange the following from the smallest to the greatest. [2 marks]

$$\frac{21}{5}, \quad 2.15, \quad 2\frac{1}{5}$$

- 23.** Using the same survey data, in which group A owned 0 digital devices and made up 40 per cent of the students, group B owned 1 device, group C owned 2 devices and made up 10 per cent, and group D owned more than 2 devices and made up 5 per cent, with 80 students owning no digital devices, how many students had more than 1 devices? [2 marks]

- 24.** Gabby and Helen shared a sum of money in the ratio of 3 : 2. When Gabby gave \$20 to Helen, the ratio of Gabby's amount of money to Helen's amount of money became 4 : 11. How much money did Gabby have at first? [2 marks]

- 25.** A box contained red, blue, yellow and orange beads. There was an equal number of yellow and orange beads. $\frac{1}{3}$ of the beads were red. $\frac{2}{7}$ of the remainder were blue. [2 marks]
What fraction of the beads in the box were yellow?

- 26.** Figure ACDF is made up of a square and a rectangle. The ratio of the length of AB to the length of BC is 1 : 2. The perimeter of rectangle ACDF is 160 cm. Find the area of square ABEF. [2 marks]

In the figure, A, B and C lie in that order along the top side of rectangle ACDF, and F, E and D lie directly below A, B and C along the bottom side. The line BE splits the figure into square ABEF on the left and rectangle BCDE on the right.

27. Uncle John sold $(p + 4)$ muffins on Monday. He sold $2p$ more muffins on Tuesday than on Monday. Altogether, he sold 240 muffins on the two days. Find the value of p . [2 marks]

28. At first, 15 lamp posts were arranged in a row at an equal distance from point P to Q. The distance between 2 lamp posts is 26.6 m. Then, 5 more lamp posts were added. The lamp posts were rearranged at a new equal distance from point P to Q. Find the new distance between two lamp posts. [2 marks]

29. $\frac{9}{10}$ m of ribbon is cut into shorter pieces. Each shorter piece of ribbon measures $\frac{1}{4}$ m except for the last piece. What is the length of the last piece of ribbon? Express your answer as a fraction in its simplest form. [2 marks]

30. The figure below shows two rectangular tanks, X and Y. Tank X measures 10 cm by 8 cm with a height of 20 cm, and Tank Y has a base measuring 20 cm by 3 cm. Water in Tank X was filled to the brim and Tank Y was empty. Water was poured from Tank X into Tank Y such that the water level in Tank X was $\frac{1}{2}$ that of Tank Y. [2 marks]

What was the new water level in Tank X?

Paper 2

1. 75% of a number is 36. What is the number? [2 marks]

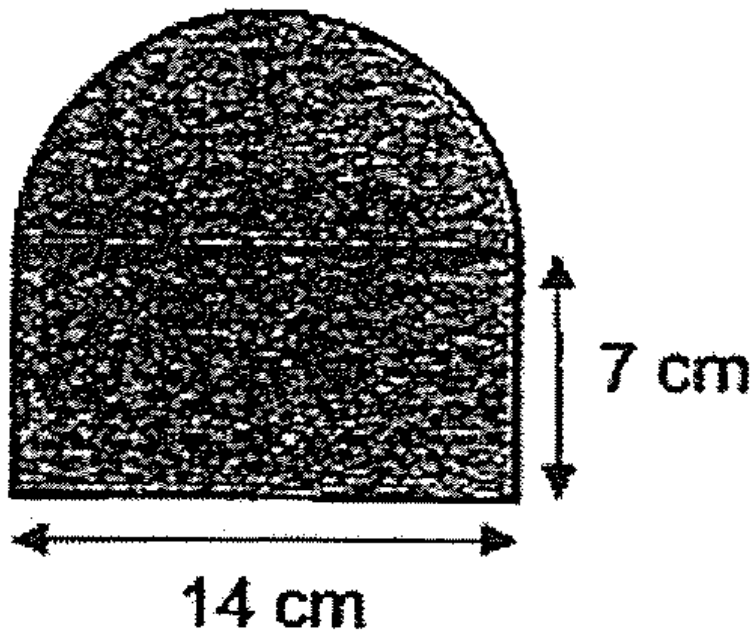
2. Raju and Huili used blocks to build towers. Raju's tower was 145 cm tall. Huili's tower was 8 cm shorter than Raju's tower. How tall was Huili's tower in metres? [2 marks]

3. At a carnival, the ratio of the number of adults to that of children is 3 : 8. The ratio of the number of boys to the number of girls is 1 : 3. [2 marks]

What is the ratio of the number of adults to the number of boys to the number of girls at the carnival?

4. The sum of three different 3-digit numbers is 405. Of the three numbers, find the largest possible number. [2 marks]

5. The figure below is made up of a semicircle and a rectangle. The rectangle is 14 cm wide and 7 cm high, and the semicircle of diameter 14 cm sits on top of the rectangle. Find the area of the figure. (Take $\pi = \frac{22}{7}$) [2 marks]



6. A library had 48 laptops ready for loan at 14 00 at its counter. Laptops were issued out on loan only for the first hour. Then the borrowers could return the laptops from 15 00 to 16 30. The line graph shows the number of laptops at the counter from 14 00 to 16 30. [5 marks]

Time	14 00	14 30	15 00	15 30	16 00	16 30
Number of laptops at the counter	48	40	24	32	40	48

- (a) What was the ratio of the number of laptops at the counter to the number of laptops loaned out at 16 00? Express your answer in its simplest form.
- (b) What was the percentage decrease in the number of the laptops at the counter from 14 30 to 15 00?
- (c) On average, how many laptops were returned to the counter per hour from 15 00 to 16 30?

7. Four children received their scores for a quiz. Ariel scored $8x$ points. Bella scored 12 points more than Ariel. The number of points Bella scored was half the number of points Charlene scored. Darrell scored 7 points. [3 marks]

(a) Complete the table below to show the number of points Bella and Charlene each scored. The number of points Ariel and Darrell scored has been filled in for you. Give your answer in terms of x in the simplest form.

Names	Number of points
Ariel	$8x$
Bella	
Charlene	
Darrell	7

(b) Find the total score of the four children when $x = 15$.

8. Eddy sold phone cards during a part-time holiday job. For every phone card sold, he would receive \$0.60. For every 20 phone cards sold, he would receive an additional \$4.50. [4 marks]

(a) How much did he receive after selling 20 phone cards?

(b) How many phone cards did Eddy need to sell to receive at least \$150?

9. Figure X below shows a square tile ABCD. It is made up of a triangle BCD, a quarter circle AFE and a shaded part BDEF. $AF = FB$. [3 marks]

(a) The area of triangle BCD is 32 cm^2 . What is the radius of the quarter circle AFE?

(b) Figure Y is made up of four such square tiles as shown in Figure X. Find the total shaded area in Figure Y. (Take $\pi = 3.14$)

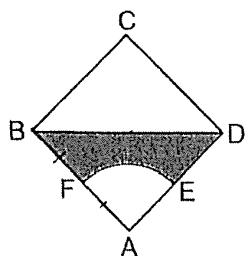


Figure X

ed area in Figure Y.

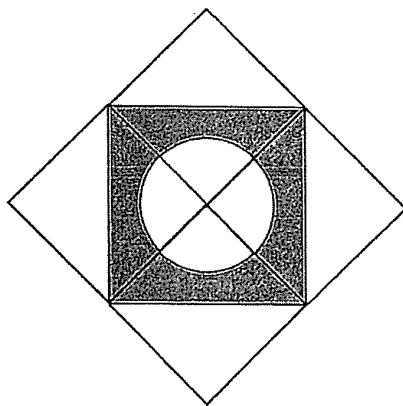


Figure Y

- 10.** At first, Mr Ahmad had a total of 600 bowls and plates in his shop. He sold $\frac{3}{5}$ of the bowls and 124 plates. After that, Mr Ahmad had thrice as many bowls as plates in his shop. [4 marks]

(a) What was the ratio of the number of bowls sold to the number of bowls left in Mr Ahmad's shop? Express your answer in its simplest form.

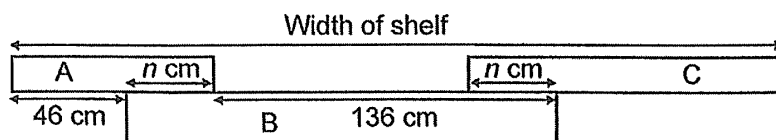
(b) How many plates and bowls did he sell altogether?

- 11.** Mr Leong used 3 wooden planks, A, B and C to build a shelf as shown below. The length of plank A is $\frac{5}{11}$ the length of plank B. The length of plank C is $\frac{1}{2}$ the total length of planks A and B. [5 marks]

Plank A shows 46 cm before it overlaps plank B by n cm, and plank B is marked 136 cm before it overlaps plank C by n cm.

(a) Find the value of n . [3]

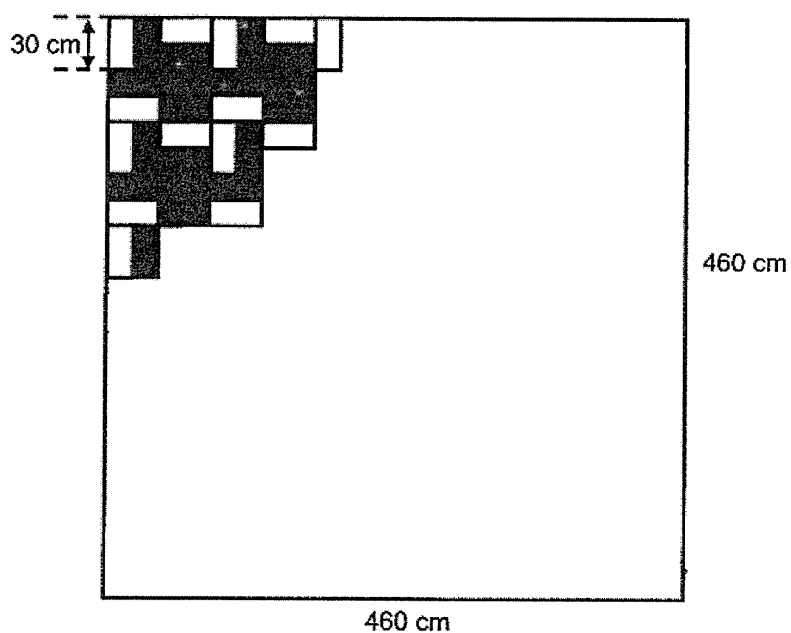
(b) What is the width of the shelf? [2]



12. Mr Lee tries to cover a square floor with as many rectangular tiles of the same size as possible that follow a pattern as shown. The tiles are either white or grey. The floor measures 460 cm by 460 cm and the shorter side of a tile is 30 cm as marked on the figure. [4 marks]

(a) What is the greatest possible number of tiles that Mr Lee can use to cover the floor? [2]

(b) Of the greatest possible number of tiles that Mr Lee can use to cover the floor, how many of the tiles are grey tiles? [2]



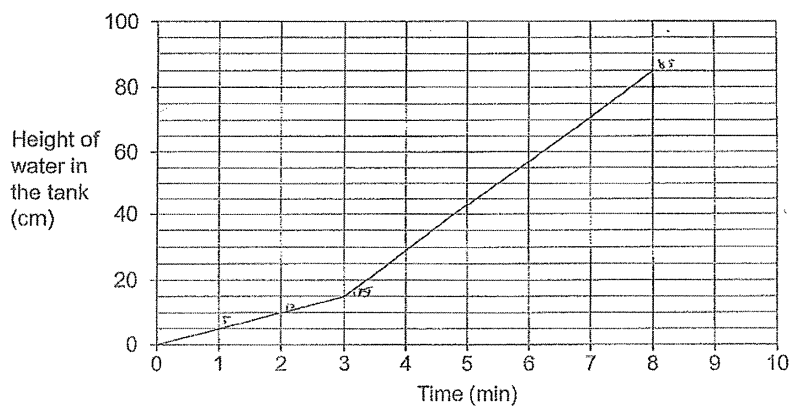
- 13.** Mrs Raja made some pineapple tarts and nutella tarts. She sold $\frac{7}{10}$ of her tarts. 75% of the tarts sold were nutella tarts. She sold 350 pineapple tarts. 30% of the unsold tarts were pineapple tarts. How many pineapple tarts were not sold? [3 marks]

- 14.** Sam wanted to fill an empty tank measuring 125 cm long and 80 cm wide with water. He turned on Tap A first and after 3 minutes, he turned on Tap B. Both taps were turned off at the same time when the tank was filled to the brim without overflowing. [4 marks]

The line graph shows the height of water in the tank over 10 minutes: the height rises steadily to 15 cm at 3 minutes, then rises more steeply and reaches 85 cm at 8 minutes, when the tank is full.

(a) Find the volume of the tank. [1]

(b) In one minute, how many litres of water flowed from Tap B? [3]



15. In the figure below, ACKL is a parallelogram, ACGH is a rectangle and ADE is an isosceles triangle. KIFE is a straight line. $AD = AE$, $\angle ADE = 75^\circ$, $\angle EBK = 102^\circ$ and $\angle CFK = 93^\circ$. [5 marks]

(a) Find $\angle LAJ$.

(b) Find $\angle JKI$.

