NANYANG PRIMARY SCHOOL

MID-YEAR EXAMINATION 2021

PRIMARY 6

MATHEMATICS PAPER 1 (BOOKLET A)

Total Duration for Booklets A and B: 1 hour

Additional materials: Optical Answer Sheet (OAS)

INSTRUCTIONS TO PUPILS

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers in the Optical Answer Sheet (OAS) provided.
5. The use of calculators is NOT allowed.

Name: _____ ( )

Class: Primary 6 ( )

Questions 1 to 10 carry 1 mark each. Questions 11 to 15 carry 2 marks each. For each question, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet. (20 marks)

1 In the scale below, what is the value of X as indicated by the arrow?

(1) 4.94

(2) 4.98

(3) 4.93

(4) 5.00 (3)

2 Find the value of $\frac{2}{3} + \frac{5}{12}$.

(1) $1\frac{3}{6}$ $\frac{2}{3} \times \frac{12}{5}^{4} = \frac{4}{5}$

(2) $3\frac{3}{6}$ $= 1\frac{3}{5}$

(3) $\frac{6}{8}$

(4) $\frac{5}{18}$ (1)

3 Larry had some stamps. He gave 40% of his stamps to Ravi and 20% of the remaining stamps to Lina. What percentage of Larry's stamps were given to Lina?

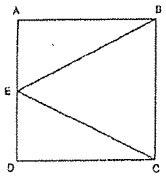
(1) 12% $100\% - 40\% = 60\%$

(2) 20% $\frac{20}{100} \times 60\% = 12\%$

(3) 40%

(4) 60% (1)

4 In the figure below, ABCD is a square and AE = ED. What type of triangle is BEC?



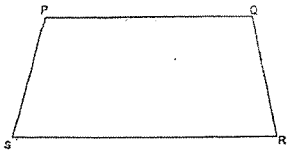
(1) Isosceles triangle

(2) Equilateral triangle

(3) Right-angled triangle (1)

(4) Obtuse-angled triangle

5 In the figure below, PQRS is a trapezium.



Which one of the following is true?

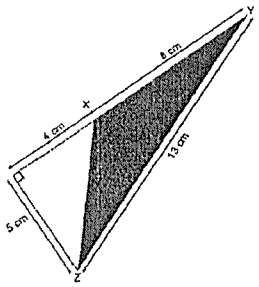
(1) PQ // PS

(2) ∠SPQ = ∠QRS

(3) ∠PSR + ∠SRQ = 180°

(4) ∠QPS + ∠PSR = 180° (4)

6 Find the area of triangle XYZ.



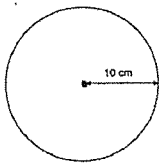
(1) 10 cm² $\frac{1}{2} \times 8 \times 5^{4} = 20$

(2) 20 cm²

(3) 30 cm²

(4) 32.5 cm² (2)

7 The figure below is a circle of radius 10 cm. What is the circumference of the circle? Express your answer in terms of π.



(1) 10π cm $2 \times \pi \times 10 = 20\pi$

(2) 20π cm

(3) 100π cm

(4) 400π cm (2)

8 Which of the following is likely to be the height of a school bus?

(1) 0.3 m

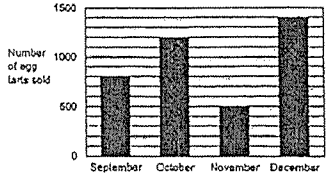
(2) 3 m

(3) 30 m

(4) 300 m (2)

Use the information below to answer Questions 9 and 10.

The graph shows the number of egg tarts sold by a confectionery shop from September to December.



9 What was the total number of egg tarts sold from September to December?

(1) 3900 $850 + 1300 + 500 + 1400 = 3950$

(2) 3800

(3) 3600

(4) 3200 (1)

10 What was the difference between the greatest number and the least number of egg tarts sold?

(1) 900 $1400 - 500 = 900$

(2) 700

(3) 600 (1)

(4) 400

11 In a school, the number of boys is $\frac{5}{8}$ of the number of girls. What is the ratio of the number of girls to the total number of children in the school?

(1) 5 : 8 $8 : 5 : 13 \quad 5 : 13$

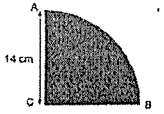
(2) 5 : 13

(3) 8 : 5

(4) 8 : 13 (4)

12 The shaded figure below is a quarter circle of radius 14 cm. What is the area of the shaded figure?

Take $\pi = \frac{22}{7}$



(1) 22 cm² $\frac{1}{4} \times \frac{22}{7}^{11} \times 14^{2} \times 14 = 154$

(2) 88 cm²

(3) 154 cm² (3)

(4) 616 cm²

13 Mrs Lee had 32.7 kg of flour at first. She used 7.2 kg of the flour to make some cakes. She then packed the remaining flour equally into 50 packets. How much flour was there in each packet?

(1) 0.61 g
(2) 6.1 g
(3) 61 g
(4) 610 g

32.7 - 7.2 = 25.5
25.5 x 1000 = 25500
25500 ÷ 50 = 510

(4)

14 Express $6h + 12 - 4h + h - 6$ in the simplest form.

(1) $4h + 6$
(2) $4h - 6$
(3) $6h + 6$
(4) $6h - 6$

(3)

15 Mr Chen had some apples at first. $\frac{2}{5}$ of the apples were red and the rest were green. He sold $\frac{1}{5}$ of the total number of apples. $\frac{2}{3}$ of the apples sold were red. 90 green apples were left unsold. How many green apples did Mr Chen have at first?

(1) 10
(2) 30
(3) 108
(4) 126

$\frac{2}{5}$ → Red apple
$\frac{3}{5}$ → Green apples
Sold: $\frac{1}{5}$ → $\frac{2}{3}$ (Red sold)
→ $\frac{1}{3}$ (Green sold)
$\frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$ (red, sold)
$\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$ (green, sold)
$\frac{3}{5} - \frac{1}{15} = \frac{1}{3}$ (green, unsold)
$\frac{1}{3}$ → 90
$\frac{1}{5}$ → 90 x 3 = 270 (total)
$\frac{2}{5} \times 270 = 108$ (ans)

(3)

NANYANG PRIMARY SCHOOL

MID-YEAR EXAMINATION
2021

PRIMARY 6

MATHEMATICS
PAPER 1
(BOOKLET B)

Total Duration for Booklets A and B: 1 hour

INSTRUCTIONS TO PUPILS

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write your answers in this booklet.
5. The use of calculators is NOT allowed.

Name: _____ ( )

Class: Primary 6 ( )

Booklet B	120

Please sign and return the examination paper the next day. Any queries should be raised at the same time when returning paper.

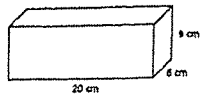
Questions 16 to 20 carry 1 mark each. Write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (5 marks)

16 Express $3\frac{3}{20}$ as a decimal.

$3\frac{3}{20} = 3\frac{15}{100}$
$= 3.15$

Ans: 3.15

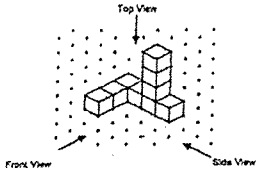
17 Find the volume of the cuboid below.



$20 \times 5 \times 9 = 900$

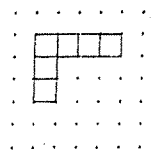
Ans: 900 cm³

18 Ruth stacked 9 unit cubes and glued them together to form the solid below.

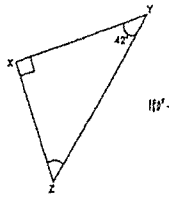


Draw the top view of the solid on the grid below.

Top View



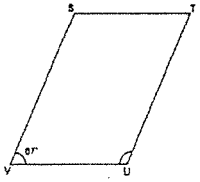
19 In the figure below, XYZ is a right-angled triangle. $\angle XYZ = 42°$. Find $\angle YZX$.



$180° - 42° - 90° = 48°$

Ans: 48°

20 In the figure below, STUV is a parallelogram and $\angle SVU = 67°$. Find $\angle TUV$.

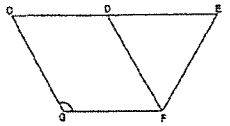


$180° - 67° = 113°$

Ans: 113°

Questions 21 to 29 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (20 marks)

21 In the figure below, DEF is an equilateral triangle and CDFG is a parallelogram. CDE is a straight line. Find $\angle CGF$.



$180° - 60° = 120°$

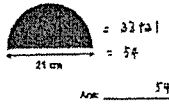
Ans: 120°

22 The diameter of a circle is 60 cm. Find the area of the circle.
Take $\pi = 3.14$

$60 \div 2 = 30$ (radius)
$3.14 \times 30 \times 30 = 2826$

Ans: 2826 cm²

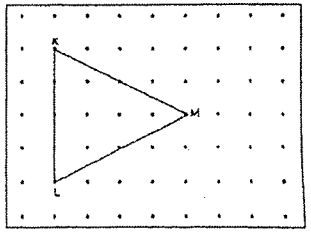
23 The shaded figure below is a semicircle of diameter of 21 cm. What is the perimeter of the shaded figure?
Take $\pi = \frac{22}{7}$



$\frac{1}{2} \times \frac{22}{7} \times \frac{3}{21} + 21$
$= 33 + 21$
$= 54$

Ans: 54 cm

24 A straight line KL is drawn on a square grid inside a box.



M is one of the dots inside the box. Line KL is the base of triangle KLM. The base, KL, and the corresponding height of triangle KLM are equal. Draw two lines KM and LM to complete triangle KLM with KM = LM.

Pedro had a 700-cm long rope. He cut it into 3 pieces A, B and C. The length of rope A was divisible by 3 and 7. The length of rope B was 4 times the length of rope A. The total length of rope A and rope B was less than 450 cm. The length of rope C was longer than the length of rope A but shorter than the length of rope B.

(a) What was the length of rope C?

(b) What was the total length of rope A and rope B?

Multiple of 3 and 7: 21, 42, 63, 84, ...
Guess & check:
Rope A: 21
Rope B: 21×4 = 84
A+B: 21+84 = 105
Rope C: 700 − 105 = 595 ✗

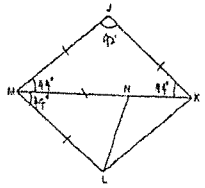
Rope A: 42
Rope B: 42×4 = 168
A+B: 42+168 = 210
Rope C: 700 − 210 = 490 (✓)

Rope A: 84
Rope B: 84×4 = 336
A+B: 84+336 = 420 ✓
Rope C: 700 − 420 = 280 (✓)

Ans: (a) 280 cm [2]
(b) 420 cm [1]

5

10 In the figure below, JKLM is a rhombus. MNK is a straight line and MN = ML. ∠MNL is 24° more than ∠LMN. Find ∠MJK.

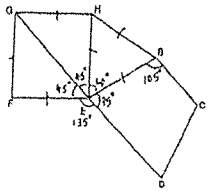


180° − 49° − 24° = 132°
132° ÷ 3 = 44° (∠NML)
180° − 44° − 44° = 92°

Ans: 92° [3]

9

11 In the figure below, BCDE is a trapezium. BC is parallel to ED. BEH is an equilateral triangle and EFGH is a square.



(a) Find ∠DEF.

(b) Find ∠EDC.

180° − 45° = 135°
180° − 45° − 10° = 75°
180° − 75° = 105°

Ans: (a) 135° [2]
(b) 105° [2]

7

12 Mrs Manon baked some cookies. 60% of the cookies were almond cookies and the rest were chocolate cookies. She then sold half of her almond cookies and had 78 almond cookies left.

(a) Did the percentage of the cookies that were chocolate increase, decrease or remain the same after the sale of the almond cookies? Show your working clearly.

(b) How many cookies did Mrs Manon bake?

At first	After
A : C : T	A : C : T
60 : 40 : 100	30 : 40 : 70
6 : 4 : 10	3 : 4 : 7
$\frac{4}{10} \to 40\%$	$\frac{4}{7} \to 57.1\%$

3u → 78
1u → 78 ÷ 3 = 26
10u → 26 × 10 = 260

Ans: (a) increase [1]
(b) 260 [2]

8

13 At first, Jonathan and Kimberly had $88 altogether. The ratio of Jonathan's money to Kimberly's money was 4 : 7 at first. After each of them spent an equal amount of money, the ratio of Jonathan's money to Kimberly's money became 5 : 11.

(a) How much money did Jonathan spend?

(b) How much money did they have left altogether?

At first	After
J : K : P	J : K : P
4 : 7 : 3	5 : 11 : 6
8 : 14 : 6	

8u + 14u + 6u = 22u
22u → $88
1u → $88 ÷ 22 = $4
8u − 5u = 3u (spent)
3u → 3 × $4 = $12
5u + 11u = 16u
16u → 16 × $4 = $64

Ans: (a) $12 [2]
(b) $64 [2]

9

14 A baker has some packets of sugar and some packets of flour. He has 22 more packets of sugar than packets of flour. Each packet of sugar is 1.5 kg. Each packet of flour is 1.7 kg more than each packet of sugar. The total mass of all the packets of sugar and packets of flour is 225.7 kg. How many such packets of sugar does he have?

Sugar → 1.5 kg
flour → 1.5 + 1.7 = 3.2 (kg)

22 × 1.5 = 33
225.7 − 33 = 192.7
1.5 + 3.2 = 4.7 (1 pack of sugar + 1 pack of flour)
192.7 ÷ 4.7 = 41 (sets of sugar & flour)
41 + 22 = 63

Ans: 63 [4]

10

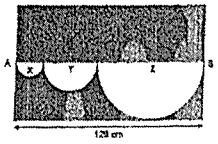
15 Mr Tan had some stickers at first. He gave all his stickers to his 35 students in his class. Each student received an equal number of stickers. $\frac{3}{7}$ of the students gave away $\frac{2}{3}$ of their share of stickers to the rest of the students in the class. As a result, the rest of the students received 9 more stickers each. How many stickers did Mr Tan have at first?

$\frac{3}{7} \times 35 = 15$ (15 students gave away)
35 − 15 = 20
20 × 9 = 180
$\frac{2}{3} \to 180$
$\frac{1}{3} \to 180 \div 2 = 90$
$\frac{3}{3} \to 90 \times 3 = 270$
270 ÷ 15 = 18
35 × 18 = 630

Ans: 630 [4]

11

16 The figure below is formed by a rectangle and three circles X, Y and Z. The diameter of circle X is half that of circle Y. The diameter of circle Y is half that of circle Z. Line AB divides the whole figure into two equal parts. Line AB also passes through the diameters of the three circles. Circle Z touches three sides of the rectangle.



(a) What is the diameter of circle Z?

(b) Find the total area of the shaded parts.
Take π = 3.14

1u + 2u + 4u = 7u
7u → 126
1u → 126 ÷ 7 = 18
4u → 18 × 4 = 72 (diameter of Z)

Area of X = $\frac{1}{2} \times 3.14 \times 9 \times 9 = 127.17$ (area of ½)
9 + 9 = 18 (radius of Y)
Area of Y = $\frac{1}{2} \times 3.14 \times 18 \times 18 = 508.68$ (area of ½)
36 ÷ 2 = 36 (radius of Z)
Area of Z = $\frac{1}{2} \times 3.14 \times 36 \times 36 = 2034.72$ (area of ½)
128 × 72 = 9072 (area of rect)

9072 − 127.17 − 508.68 − 2034.72
= 6401.43

Ans: (a) 72 cm [2]
(b) 6401.43 cm² [3]

12

25 Rowan and Sindri had some savings. $\frac{3}{5}$ of Rowan's savings was equal to $\frac{2}{3}$ of Sindri's savings. What was the ratio of Sindri's savings to Rowan's savings?

$\frac{3}{5} R \rightarrow \frac{2}{3} S$

$\frac{1}{10} R \rightarrow \frac{1}{9} S$

$S : R$

$9 : 10$

Ans: 9:10

26 A group of students shared some bookmarks among themselves. They tried taking 9 bookmarks each, but found that the last student had only 5 bookmarks. When each student took 7 bookmarks, there were 10 bookmarks leftover. How many students were there?

$9-5=4$

$10+4=14$ (total difference)

$9-7=2$

$14 \div 2 = 7$

Ans: 7

6

27 The prices of blueberry muffins sold in a bakery are shown in the table below.

SPECIAL OFFER
1 blueberry muffin for $1.30
3 blueberry muffins for $3.20
6 blueberry muffins for $6.00

Mrs Tay wants to buy 28 blueberry muffins. What is the least amount of money she has to pay?

$28 \div 6 = 4 \text{ R } 2$

$4 \times \$6 = \$24$

$2 \times \$1.20 = \$2.40$

$\$24 + \$2.40 = \$26.40$

Ans: $ 26.40

28 Mrs Tan gave $\frac{7}{10}$ of a cake to a friend. She cut the remaining cake equally into 6 slices. What fraction of the whole cake was each slice?

$1 - \frac{7}{10} = \frac{3}{10}$

$\frac{3}{10} \div 6 = \frac{1}{10} \times \frac{1}{6}$

$= \frac{1}{20}$

Ans: $\frac{1}{20}$

7

internal transfer → total unchanged

29 The ratio of the number of balls in box A to the number of balls in box B was 5 : 3 at first. 36 balls from box A were then transferred to box B. The ratio of the number of balls in box A to the number of balls in box B became 1 : 3. How many balls were in box A at first?

At first: A : B : T

$5 : 3 : 8$

End: A : B : T

$1 : 3 : 4$

$2 : 6 : 8$

$5u - 2u = 36$

$3u \rightarrow 36$

$1u \rightarrow 36 \div 3 = 12$

$5u \rightarrow 12 \times 5 = 60$

Ans: 60

30 Below is a recipe for making 20 pieces of chocolate chip cookies.

Chocolate Chip Cookie Recipe
(20 pieces)

- 200 g flour
- 150 g butter
- 100 g sugar
- 50 g chocolate chips
- 1 egg

(a) How many grams of flour are needed to make 50 pieces of chocolate chip cookies?

(b) Based on the recipe, June made some chocolate chip cookies. She used 350 g of sugar. How many grams of butter did she use?

$200 \div 20 \times 50 = 500$

$350 \div 100 \times 150 = 525$

Ans: (a) 500 g

(b) 525. g

End of Paper

8

NANYANG PRIMARY SCHOOL

MID-YEAR EXAMINATION
2021

PRIMARY 6

MATHEMATICS
PAPER 2

Duration: 1 hour 30 minutes

INSTRUCTIONS TO PUPILS

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write your answers in this booklet.
5. The use of an approved calculator is expected, where appropriate.

Name: _____ ( )

Class: Primary 6 ( )

Parent's Signature: _____

Booklet A	/20
Booklet B	/25
Paper 2	/55
Total	/100

Please sign and return the examination paper the next day. Any queries should be raised at the same time when returning paper.

Questions 1 to 8 carry 2 marks each. Show your working clearly and write your answers in the spaces provided. For questions which require units, give your answers in the units stated. (10 marks)

1 The table below shows the number of storybooks read by each student in a class. Part of the table is covered by an ink blot. There were 20 students who read less than 3 storybooks. There were twice as many students who read 3 storybooks as those who read 8 storybooks.

Number of storybooks	1	2	3	4	5
Number of students	8	[ink blot]	3	4	

(a) How many students read 2 storybooks?

(b) How many students were there in the class?

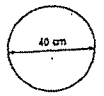
$20 - 9 = 11$

$9 + 11 + 8 + 3 + 4 = 35$

Ans: (a) 11

(b) 35

2 A wheel of diameter 40 cm made 10 complete turns. Find the distance covered.
Take $\pi = 3.14$



$3.14 \times 40 \times 10 = 1256$

Ans: 1256 cm

1

3 The price of a pair of shoes was $80 before discount. Richard bought the pair of shoes at a discount of 15% during a sale. How much did he pay for the pair of shoes?

$100\% - 15\% = 85\%$

$\frac{85}{100} \times \$80 = \$68$

Ans: $ 68

4 A machine prints 300 posters in 12 minutes. At this rate, how long does it take to print 2250 posters?

$300 \div 12 = 30$

$2250 \div 30 = 75$

Ans: 75 min

5 The average of 8 consecutive whole numbers is 35.5. Find the smallest number.

$35.5 \times 8 = 213$

$213 - (1+2+3+4+5+6+7) = 191$

$191 \div 8 = 33$

Ans: 33

2

For questions 9 to 17, show your working clearly and write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part-question. (45 marks)

6 There are 12 fewer workers in factory A than factory B. $\frac{1}{8}$ of the workers in factory A are male. There are 36 more female workers than male workers in factory A. How many workers are there in factory B?

$1 - \frac{1}{8} = \frac{7}{8}$ (female)

$\frac{7}{8} - \frac{1}{8} = \frac{6}{8}$

$48 + 12 = 60$

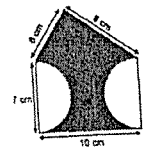
$6u \rightarrow 36$

$1u \rightarrow 36 \div 6 = 6$

$8u \rightarrow 6 \times 8 = 48$

Ans: 60 [3]

7 The figure below is made up of a right-angled triangle, a rectangle and 2 semicircles. Find the total area of the shaded parts.
Take $\pi = 3.14$



$\frac{1}{2} \times 6 \times 8 = 24$ (area of triangle)

$10 \times 7 = 70$ (area of rect.)

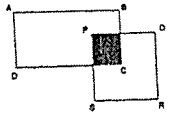
$3.14 \times 3.5 \times 3.5 = 38.465$

$24 + 70 - 38.465 = 55.535$

Ans: 55.535 cm² [3]

3

8 In the figure below, ABCD is a rectangle and PQRS is a square. $\frac{1}{5}$ of rectangle ABCD and $\frac{2}{3}$ of square PQRS are shaded. The total area of the unshaded parts is 396.5 cm². Find the area of the shaded part.



ABCD: $4 : 1$, $4 : 5 : 1$, $2 : 10 : 12$

PQRS: $3 : 1$, $3 : 2 : 3$

$12u + 3u = 132$ (unshaded)

$132 \rightarrow 396.5$

$1u \rightarrow 396.5 \div 132 = 30.5$

$2u \rightarrow 30.5 \times 2 = 61$

Ans: 61 cm² [3]

4

12 Two pouches, Y and Z, contained some gold tokens and silver tokens at first. In Pouch Y, the ratio of the number of gold tokens to the number of silver tokens was 3 : 1. In Pouch Z, the ratio of the number of gold tokens to the number of silver tokens was 1 : 4. Pouch Z had 5 times as many tokens as Pouch Y.

(a) What was the ratio of the number of gold tokens in Pouch Y to the number of silver tokens in Pouch Z?

(b) After 24 gold tokens and 24 silver tokens were transferred from Pouch Z to Pouch Y, the ratio of the number of gold tokens to the number of silver tokens in Pouch Y became 9 : 5. What was the total number of tokens in Pouch Y in the end?

(c) What was the total number of tokens in both pouches, Y and Z, at first?

Pouch Y
G : S : T
3 : 1 : 4

Pouch Z
G : S : T
1 : 4 : 5 ×4
4 : 16 : 20

G : S
3 : 16 (ans)

Pouch Y

first
G : S : D
3 : 1 : 2
6 : 2 : 4
9u − 6u = 3u
3u → 24
1u → 24 ÷ 3 = 8
9u + 5u = 14u
14u → 14 × 8 = 112 (ans)

After
G : S : D
9 : 5 : 4

6u + 2u = 8u (Y, at first)
8 × 8 = 64 (total in Y, at first)
64 × 5 = 320 (Z)
64 + 320 = 384 (ans)

Ans: (a) 3 : 16 (1)
(b) 112 (2)
(c) 384 (2)

End of Paper