

(A)

Answer all the questions.

- 1 (a) Write down all the factors of 36.

Answer [1]

- (b) Consider the following seven numbers:

-21 , 0 , 2 , -9 , $\sqrt{5}$, 3 , 17

Write down all the prime numbers.

Answer [1]

- 2 Express

- (a) 36.6869 correct to 2 decimal places,

Answer [1]

- (b) 0.08247371 correct to 4 significant figures.

Answer [1]

- 3 Write an algebraic expression for each of the following statements.

- (a) Divide x by $2y$.

Answer [1]

- (b) Add the cube of u to 4 times of k .

Answer [1]

- 4 Write each of the following ratio in its simplest form.

- (a) $34 : 126$

Answer [1]

- (b) $0.24 : 1\frac{4}{5}$

Answer [1]

- 5 Dave gave some sweets to his two sisters, Sue and Faith, in the ratio of $5 : 11$. Faith received 24 sweets more than Sue.

- (a) Calculate the number of sweets Sue received.

Answer [1]

- (b) Calculate the total number of sweets Dave gave to his two sisters.

Answer [1]

- 6 Siti scored $(20a + 50b)$ marks for a Mathematics test and $(60a - 10b)$ marks for her English test. She scored better in her English test than for her Mathematics test.

Write down and simplify an expression, in terms of a and b , for

- (a) the total marks she obtained for both the tests,

Answer [1]

- (b) the difference in marks she obtained for the two tests.

Answer [2]

- 7 (a) Express 45% as a fraction in its lowest terms.

Answer [1]

- (b) In a class of 40 students, 30% are boys.

$\frac{1}{4}$ of the boys in the class wear spectacles.

Calculate the number of boys in the class who wear spectacles.

Answer [2]

- 8 The table below shows the temperatures in five countries at noon on a particular day.

Japan	China	Singapore	Korea	Thailand
-3°C	0°C	29°C	-15°C	30°C

- (a) Find the difference in temperature between Japan and Singapore.

Answer $^{\circ}\text{C}$ [1]

- (b) State the country with the coldest temperature.

Answer [1]

- (c) 24°C means that the temperature is 24 degrees Celsius above 0°C . Explain the meaning of -17°C .

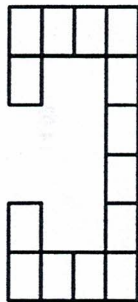
Answer

..... [1]

- 9 (a) The MRT network is 170.7 km long. Change this length into metres.

Answer m [1]

- (b) Shade $\frac{3}{7}$ of the figure below.



[1]

- (c) If $p : q = 3 : 4$ and $\frac{q}{r} = \frac{2}{5}$, find $p : r$.

Answer [1]

- 10 Simplify

(a) $2(3a)$,

Answer [1]

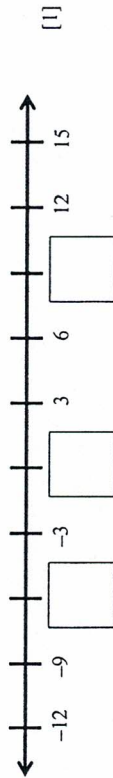
(b) $5x + 4 - 3x - 9$,

Answer [1]

(c) $-\left(a - \frac{3}{4}b\right) + \frac{1}{2}a$.

Answer [2]

- 11 (a) Fill in the boxes to complete the number line below.



[1]

- (b) Write the following numbers in order of size, smallest first.

$\sqrt{3}$ $\frac{27}{19}$ 16% 1.47

Answer smallest largest [1]

- (c) Use a calculator to work out $\frac{(35.2^2 - 24.32) \times 56.2}{\sqrt[3]{34.6}}$ and correct your answer to 2 significant figures.

Answer [1]

- 12 Without the use of calculator, evaluate the following, showing all your working steps clearly.

(a) $-12 + (-5) \times (-6)$

Answer [2]

(b) $\frac{1}{4} \div 2\frac{1}{3}$

Answer [2]

- 13 (a) Write down thirteen million, four thousand, six hundred and twenty-five in numerals.

Answer [1]

- (b) Write down the numeral 5 306 712 in words.

Answer

 [1]

- (c) Write down the place value of the digit 5 in 465 731.

Answer [1]

- (d) Find the number of hundreds in 42 500.

Answer [1]

- 14 Use $<$, $>$, or $=$ to complete each of these statements.

(a) $\sqrt{0.36}$ $\frac{3}{5}$ [1]

(b) $14\frac{1}{8}\%$ 14.03 [1]

(c) $-2.6\bar{8}$ -2.688 [1]

- 15 (a) Express 36 centimetres as a percentage of 5 metres.

Answer % [1]

- (b) (i) Dave reads n number of books.
 He reads 4 more books than Crystal.
 Express the number of books Crystal reads in terms of n .

Answer [1]

- (ii) If Dave reads 7 books, how many books does Crystal read?

Answer [1]

16 The recipe of a chocolate cake is given below.

Serves 4 people	
Ingredients	Portion
flour	140 g
sugar	160 g
butter	175 g
cocoa	40 g
baking powder	1 teaspoon
eggs	3

- (a) Alice wants to bake a chocolate cake for 8 people.
How many grams of flour does she need?

Answer g [1]

- (b) Mrs Lim uses the same recipe with 240 grams of cocoa.
How many people is she baking the chocolate cake for?

Answer [1]

- (c) Express the amount of butter used as a percentage of the amount of flour used to
bake a chocolate cake.

Answer % [1]

- (d) Aisha wants to reduce the amount of sugar used by $\frac{1}{8}$.
Calculate the amount of sugar she needs to bake a chocolate cake for 4 people.

Answer g [1]

- (e) Baking a chocolate cake using this recipe requires 105 minutes.
Calculate the total time required to bake 3 chocolate cakes, one after another, in
hours and minutes.

Answer h min [2]

- (f) The total cost of all the ingredients to bake a chocolate cake is $\$(2a + ab^2)$.
If $a = 2$ and $b = 3$, find the total cost of baking 1 chocolate cake.

Answer \$ [1]

Answer all the questions.

- 1 Put these numbers in order of size, smallest first.

$$\frac{2}{5}, -3, -8.9, 7, \sqrt{36}$$

Answer smallest largest [2]

- 2 Use your calculator to work out

(a) $\frac{\frac{2}{5} + 1\frac{1}{3}}{2\frac{1}{10} - 1\frac{1}{2}}$,

Answer (a) [1]

(b) $\left[\frac{4}{3} \times \left(\frac{5}{6} - 1 \right) \right]^2$.

Answer (b) [1]

3. (a) Express $\frac{3}{25}$ % as a decimal.

Answer (a) [1]

- (b) Express $7\frac{1}{5}$ as a percentage.

Answer (b) % [1]

[Turn Over]

- By rounding off each number to 2 significant figure, estimate the value of $\frac{\sqrt{15.8} \times 20.3}{10.45}$, correct to 1 significant figure. Show your working clearly.

Answer [2]

- 5 Samuel ordered 3000 kg of flour. $\frac{2}{5}$ of the flour that was ordered by Samuel was used for baking at his bakery. $\frac{1}{3}$ of the remaining amount of flour was then packed into packets of 200 g each. The rest of the flour was then sold away by Samuel.

Calculate

- (a) the amount of flour, in kilograms, that was used for baking at Samuel's bakery,

Answer (a) kg [2]

- (b) the total number of packets of flour that was packed.

Answer (b) packets [2]

6 Find the missing number in the blanks.

(a) $128 \div \underline{\hspace{1cm}} = 4$.

Answer (a) [1]

(b) $[\underline{\hspace{1cm}} \div (-3)] \times 7 = -21$.

Answer (b) [1]

7 During the Great Singapore Sale, Store A and Store B offer the following promotions:

Store A	Store B
25% discount	\$500 discount

Sarah wants to buy a television set with a usual price of \$2150 before discount. Showing your workings clearly, state which store would give Sarah a better deal in buying the television set.

Answer Store [2]

8 In 2009, Muthu bought an antique vase from a seller. In 2017, Muthu sold the same antique vase for \$74 750 and he made a profit of 30% from the sale. Calculate the original amount of money that Muthu had paid for the antique vase in 2009.

Answer \$ [2]

9. The table shows the temperature in four cities on a particular day.

City	Temperature/°C
Cairo	35
Berlin	-13
Singapore	31
New York	-6

For this particular day,

(a) find the difference in temperature between Cairo and New York,

Answer (a) °C [1]

(b) find the temperature in Moscow, given that the temperature in Moscow is exactly midway between the temperatures in Singapore and Berlin.

Answer (b) °C [2]

10 The ratio of the selling prices of apartment A to that of apartment B is $3 : 2$. The ratio of the selling price of apartment B to that of apartment C is $5 : 3$.

- (a) Find the ratio of the selling price of apartment A to that of apartment B to that of apartment C , leaving your answer in its simplest form.

Answer (a) : : [2]

- (b) Given that the difference in price between the highest selling price and the lowest selling price of the three apartments is \$495 000, find the lowest selling price of the three apartments.

Answer (b) \$ [2]

End of Paper

- 1 (a) Write 190 513 in words.
 (b) Draw a number line in the space provided below to represent integers from -8 to 4. Use 1 cm to represent 2 units.



Answer (a) _____ [1]
 (b) As above [1]

- 2 Fill in the blanks with '<', '>' or '=' in the answer spaces below.

- (a) 0 -4
 (b) $\frac{6}{7}$ $\frac{18}{21}$
 (c) 0.6 $(-3)^3$

Answer (a) _____ [1]
 (b) _____ [1]
 (c) _____ [1]

- 3 (a) By rounding each number to 1 significant figure, estimate the value of

$$\frac{59.494}{12.609 - 3.51}$$
 Show all working.
 (b) Use your calculator to find the value of $\frac{59.494}{12.609 - 3.51}$, giving your answer correct to 4 significant figures.

Answer (a) _____ [2]
 (b) _____ [1]

- 4 (a) List the prime numbers between 10 and 25.
 (b) Find the difference between the largest and smallest prime number between 10 and 25.

Answer (a) _____ [1]
 (b) _____ [1]

- 5 (a) A box of Brand A cereals weighs $\frac{2}{5}$ kg while a box of Brand B cereals weighs $\frac{1}{6}$ kg. Find the ratio of the mass of Brand A cereals to the mass of Brand B cereals.
- (b) Edwin and Tom shared 63 sweets in the ratio 5:4. How many sweets does each of them have?

Answer (a) _____ [1]

(b) Edwin = _____ sweets

Tom = _____ sweets [2]

- 6 Convert each of the following to a percentage.

- (a) $\frac{1}{6}$,
- (b) 2.15.

Answer (a) _____ [1]

(b) _____ [1]

- 7 Fill in the blank.

(a) $\frac{\boxed{}}{7} = \frac{24}{56}$

- (b) State an equivalent fraction of $\frac{5}{6}$.

Answer (a) _____ [1]

(b) _____ [1]

- 8 (a) Express $4\frac{7}{24}$ as a recurring decimal.

- (b) Arrange the following in ascending order.

$2\frac{1}{9}$, 2.1101, 2.112, $2\frac{1}{90}$

Answer (a) _____ [1]

(b) _____ [1]

- 9 (a) Express $15\frac{3}{4}$ as an improper fraction.

- (b) Arrange the following fractions in descending order.

$\frac{1}{5}$, $\frac{10}{35}$, $\frac{3}{7}$, $\frac{15}{7}$

Answer (a) _____ [1]

(b) _____ [1]

- 10 Tim bought fish, eggs and oranges which costs \$12.89, \$4.05 and \$6.95 respectively. He gave the cashier \$50. Estimate how much change he would receive from the cashier.

Answer \$ _____ [2]

- 11 Without the use of a calculator, evaluate the following. Show your workings clearly.

- (a) $35 + (7 - 10),$
 (b) $4\frac{1}{3} \div \left(\frac{7}{18} - \frac{1}{6}\right) - \frac{1}{2},$
 (c) $\sqrt[3]{729} \times 12 - 4^2.$

Answer (a) _____ [1]
 (b) _____ [2]
 (c) _____ [2]

- 12 On a particular day, the ratio of the number of boys to the number of girls in the zoo was 3 : 1. The ratio of the number of girls to the number of adults is 4 : 3. Find the ratio of the number of boys to the number of girls to the number of adults.

Answer _____ [2]

- 13 (a) Evaluate $\frac{(50.31 - 20.24) \times 2.1}{3.67 + 1.86},$ to the nearest integer.
 (b) Express $1\frac{3}{13}$ as a decimal, correct to 3 decimal places.

Answer (a) _____ [1]
 (b) _____ [1]

- 14 (a) Simplify 35kg : 1250g.
 (b) Express 120% as a decimal.

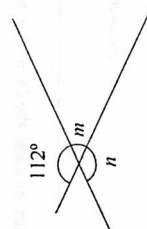
Answer (a) _____ [1]
 (b) _____ [1]

- 15 Kim earns \$2000 in a month. She spends $\frac{1}{3}$ of the money on food and $\frac{5}{12}$ of the money on transport and saves the rest.

- (a) What fraction of the money does Kim save?
(b) How much does Kim save?

Answer (a) _____ [1]
(b) \$ _____ [2]

- 16 Find the value of the unknown angles m and n .



Answer $m =$ _____ $n =$ _____ $^{\circ}$ [2]

- 17 In a 280 g bar of chocolate, 82% of the mass is cocoa, 3% of the mass is honey and the remainder of the mass is milk. Find
- (a) the mass of cocoa in the bar of chocolate,
(b) the mass of milk in the bar of chocolate.

Answer (a) _____ g [2]
(b) _____ g [2]

- 18 Mr Lim worked for 24 hours while Mr Tan worked for 14 hours. Mr Lim was paid \$440 while Mr Tan was paid \$280.

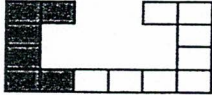
- (a) Find the ratio of Mr Lim's working hours to that of Mr Tan's.
(b) Find the ratio of Mr Lim's salary to that of Mr Tan's.
(c) Were the salaries fair? Explain your answer.

Answer (a) _____ [1]
(b) _____ [1]
(c) _____ [1]

19 Fantasyland sold 85% of the tickets for a concert.

- (a) If 6375 tickets were sold, calculate the total number of tickets for the concert.
- (b) Only 5050 people actually attended the concert. Calculate the percentage of people who did not attend the concert, leaving your answer in 2 decimal places.

Answer (a) _____ people [2]
(b) _____ % [2]

Qn	Solution	Marks	Remarks
1a	1, 2, 3, 4, 6, 9, 12, 18, 36	A1	
1b	2, 3, 17	A1	
2a	36.69	A1	
2b	0.08247	A1	
3a	$\frac{x}{2y}$	A1	
3b	$4k + n^2$	A1	
4a	17 : 63	A1	
4b	2 : 15	A1	
5a	6 units ----- 24 sweets 1 unit ----- 4 sweets 5 units ----- 20 sweets Sue has 20 sweets.	A1	
5b	Total number of sweets = 4×16 = 64	A1	
6a	$20a + 50b + 60a - 10b$ = $80a + 40b$	A1	
6b	$(60a - 10b) - (20a + 50b)$ = $40a - 60b$	M1 A1	
7a	$45\% = \frac{45}{100} = \frac{9}{20}$	A1	
7b	Number of boys = $\frac{30}{100} \times 40$ = 12 Number of boys who were spectacles = $\frac{1}{4} \times 12$ = 3	M1 A1	
8a	Difference in temperature = $29 - (-3)$ = $29 + 3$ = 32°C	A1	
8b	Korea	B1	
8c	-17°C means 17°C below 0°C .	B1	
9a	170700 m	A1	
9b		B1	Award marks as long as student shades 6 boxes.

9c	$\frac{q}{r} = \frac{2}{5}$ $q : r = 2 : 5$ $r : q = 5 : 2 = 10 : 4$ $p : q = 3 : 4$ $p : r = 3 : 10$	A1	
10a	6a	A1	
10b	$5x + 4 - 3x - 9 = 2x - 5$	A1	
10c	$-\left(a - \frac{3}{4}b\right) + \frac{1}{2}a$ = $-a + \frac{3}{4}b + \frac{1}{2}a$ = $-\frac{1}{2}a + \frac{3}{4}b$	M1 A1	
11a	-6, 0, 9	A1	
11b	16%, $\frac{27}{19}$, 1.47, $\sqrt{3}$	A1	
11c	$\frac{(35.2^2 - 24.32) \times 56.2}{\sqrt{34.6}} = 20950.14 \dots\dots$ = 21000 (3s.f.)	A1	
12a	$-12 + (-5) \times (-6)$ = $-12 + 30$ = 18	M1 A1	
12b	$\frac{1}{4} + 2\frac{1}{3}$ = $\frac{1}{4} + \frac{8}{6}$ = $\frac{3}{12} + \frac{16}{12}$ = $\frac{19}{12}$	M1 A1	
13a	13 004 625	B1	
13b	Five million, three hundred and six thousand, seven hundred and twelve	B1	
13c	Thousand	B1	
13d	425	A1	
14a	=	B1	
14b	<	B1	
14c	<	B1	
15a	$\frac{36}{500} \times 100\% = 7.2\%$	A1	

15bi	$n - 4$	A1	
15bii	$7 - 4 = 3$	A1	
16a	Amount of flour needed = 140×2 = 280g	A1	
16b	Number of servings = $240 \div 40$ = 6 Number of people = 24	A1	
16c	Percentage = $\frac{175}{140} \times 100\%$ = 125%	A1	
16d	Amount of sugar = $\frac{7}{8} \times 160$ = 140g	A1	
16e	Time taken = 105×3 = 315 mins = 5 h 15 mins	M1 A1	
16f	Total cost = $2(2) + (2)(3)^2 = \$22$	A1	

(b)	440 : 280
(c)	The ratios of their salaries and working hours are not equivalent therefore it's not fair. --- B1
19(a)	85% --- 56375 --- M1 100% --- 6375 $100\% \times 100 = 7500$ --- A1
(b)	Number of people who did not attend = 6375 - 5050 = 1325 tickets --- M1 Percentage = $\frac{1325}{6375} \times 100 = 20.7843\% \approx 20.8\%$ --- A1

On	Suggested answer
1(a)	One hundred and ninety thousand, five hundred and thirteen --- B1
(b)	
2(a)	> --- B1
(b)	= --- B1
(c)	< --- B1
3(a)	$\frac{59.494}{12.609 - 3.51} = \frac{60}{10 - 4}$ --- M1 ≈ 10 --- A1
(b)	6.53820717 = 6.539 --- B1
4(a)	11, 13, 17, 19, 23 --- B1
(b)	12 --- B1
5(a)	$\frac{5}{6} = 12:5$ --- B1
(b)	9 units --- 63 sweets 1 unit --- 7 sweets 5 units --- 35 sweets (Edwin) --- A1 4 units --- 28 sweets (Tom) --- A1
6(a)	$16\frac{2}{3}\%$ --- B1
(b)	215% --- B1
7(a)	3 --- B1
(b)	$\frac{10}{12}$ or $\frac{15}{24}$ --- B1
8(a)	4.2916 --- B1
(b)	$2\frac{1}{90}$, $2.110\bar{2}$, $2\frac{1}{9}$, 2.112 --- B1
9(a)	$\frac{4}{63}$ --- B1
(b)	$15\frac{3}{10}$ --- B1
10	$50 - (13 + 4 + 7)$ --- M1 = 26 --- A1
11(a)	$35 + (7 - 10)$

(b)	$= 35 + (-3) = 32$ --- A1
(c)	$\sqrt[3]{729 \times 12 - 4^2}$ = $9 \times 12 - 16$ --- M1 = 92 --- A1
12	B : G : A 3 : 1 12 : 4 --- M1 12 : 4 : 3 --- A1
13(a)	11, 41898734
(b)	11 (nearest integer) --- B1
14(a)	35000 : 1250
(b)	28 : 1 --- A1
15(a)	$1 - \left(\frac{3}{5} + \frac{3}{12}\right)$ = $\frac{1}{4}$ --- A1
(b)	$\frac{1}{4}$ --- A1
16	$m = 180^\circ - 112^\circ = 68^\circ$ (angles on a str line) --- A1 $n = 112^\circ$ (vert. opp angles) --- A1
17(a)	Mass of cocoa = $\frac{82}{100} \times 280$ --- M1 = 229.6g --- A1
(b)	Mass of Milk = $\frac{100}{15} \times 280$ --- M1 = 428g --- A1
18(a)	24 : 14 12 : 7 --- A1