Thinker™ EDUCATION

MATH SPECIALISTS
PRIMARY & SECONDARY

2024
S1 WA1 MATH (G3)
CLEMENTI TOWN SECONDARY SCHOOL

DETAILED SOLUTIONS

Detailed solutions are crafted following the methods taught at Thinker Education and are offered as a guiding reference. Any logically sound mathematical answers are accepted.
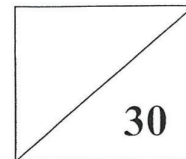
For Thinker parents, the respective levels' blank question papers and detailed solutions have been uploaded to Teams.

For others, please Whatsapp us at 9831 9770 to obtain the question papers for your child to practise.

CLEMENTI TOWN SECONDARY SCHOOL
SEC 1 G3 MATHEMATICS
2024 WEIGHTED ASSESSMENT 1
Chapter 1: Factors and Multiples
Chapter 2: Real Numbers

30

Name : **DETAILED SOLUTIONS** ( ) Class: _____ Parent's Signature: _____

Instructions   **Duration: 45 min**
- Answer **all** questions.
- The use of calculators is allowed unless otherwise specified.
- All working is to be shown clearly.
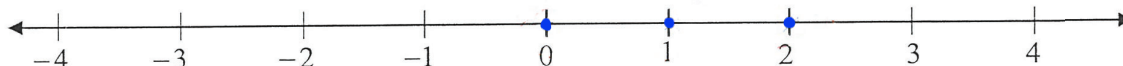- Omission of essential working will result in loss of marks.

primes, HCF, LCM

1 **(a)** Write down the first three prime numbers after 25.

Answer ...**29**..., ...**31**..., ...**37**... [1]

(b) Represent the three smallest integers that are greater than -1 on the number line below.

Answer

[1]

Integers, Rational NO., Real NO.

2 Write the following numbers in order of size, starting with the smallest.

$$\sqrt{0.5}, \quad -0.55, \quad -0.\dot{5}, \quad -\frac{1}{2}, \quad 0.5$$

$= 0.70711$ -0.555 -0.5

[2]

Answer ...$-0.\dot{5}$..., ...-0.55..., ...$-\frac{1}{2}$..., ...0.5..., ...$\sqrt{0.5}$...

Integers. Rational No., Real No.

3

$$\sqrt[3]{8}, \quad 1, \quad \frac{\sqrt{3}}{2}, \quad 0.4651, \quad 0.\dot{3}\dot{1}, \quad 6$$

$= 2$ $= 0.866$

From the list of numbers above, write down

(a) all composite number(s),

↳ more than 2 factors

Answer .... 6 .... [1]

(b) all prime number(s),

↳ only has 1 and itself as the factor

Answer .... $\sqrt[3]{8}$ .... [1]

(c) all rational number(s).

↳ can be expressed as $\frac{a}{b}$, where a and b are integers.

Answer ...... $\sqrt[3]{8}$, 1, 0.4651, 0.$\dot{3}\dot{1}$, 6 .... [1]

Integers. Rational No., Real No.

4   The temperature at the bottom of a mountain is 7 °C and the temperature at its top is −29 °C.

(a) Find the difference between the two temperatures.

$$7 - (-29)$$
$$= 36$$

Answer .... 36 .... °C   [1]

(b) The lowest temperature recorded at the top of the mountain is 15°C lower than −29 °C.
Find this temperature.

$$-29 - 15 = -44$$

Answer .... −44 .... °C   [1]

2

5 (a) Find the LCM of $2^3 \times 3 \times 5^2$ and $2^2 \times 5^3 \times 13^2$. Leave your answer in index form.

$$2^3 \times 3 \times 5^2$$
$$2^2 \times 5^3 \times 13^2$$
$$\overline{\rule{4cm}{0.4pt}}$$
$$LCM = 2^3 \times 3 \times 5^3 \times 13^2$$

Answer $2^3 \times 3 \times 5^3 \times 13^2$ [1]

(b) **(i)** Express 7225 as the product of its prime factors.

5	7225
5	1445
17	289
17	17
	1

7225
$= 5^2 \times 17^2$

Answer $5^2 \times 17^2$ [2]

(ii) **Hence** evaluate $\sqrt{7225}$ without using a calculator.

$$\sqrt{7225}$$
$$= \sqrt{5^2 \times 17^2}$$
$$= 5 \times 17$$
$$= 85$$

Answer 85 [1]

3

Primes, HCF, LCM

6   Rain, Jane and Pete were each given a rod of equal length.
Rain cut his rod into pieces, each 42 cm long.
Jane cut her rod into pieces, each 24 cm long.
Pete cut his rod into pieces, each 60 cm long.

Given that there was no remainder in each case,
find the shortest length of the rods given to each of them.

$$
\begin{array}{c|ccc}
2 & 42, & 24, & 60 \\
\hline
3 & 21, & 12, & 30 \\
\hline
2 & 7, & 4, & 10 \\
\hline
2 & 7, & 2, & 5 \\
\hline
5 & 7, & 1, & 5 \\
\hline
7 & 7, & 1, & 1 \\
\hline
& 1, & 1, & 1
\end{array}
$$

$LCM = 2^3 \times 3 \times 5 \times 7$
$= 840$

Answer ....840.............. cm   [3]

Integers, Rational No., Real No.

7   **Without using a calculator**, evaluate

(a) $6 - (-3)^2 + 6 \div (-3)$,

$= 6 - 9 + 6 \div (-3)$
$= 6 - 9 + (-2)$
$= -3 - 2$
$= -5$

Answer ....-5................ [2]

4

(b) $-\dfrac{24}{0.16} - \left(-\dfrac{45}{0.75}\right),$

$$= \frac{-24(100)}{0.16(100)} + \frac{45(100)}{0.75(100)}$$

$$= \frac{-2400}{16} + \frac{4500}{75}$$

$$= -150 + 60$$

$$= -90$$

Answer ....-90............. [3]

(c) $\dfrac{-4\dfrac{3}{8} \times \left(3 - 1\dfrac{2}{7}\right)}{\left(-2\dfrac{1}{2} - 4\right) \div \left(-1\dfrac{11}{15}\right)}.$

$$= \frac{\dfrac{-35}{8} \times \left(\dfrac{21}{7} - \dfrac{9}{7}\right)}{\left(\dfrac{-5}{2} - \dfrac{8}{2}\right) \div \left(\dfrac{-26}{15}\right)}$$

$$= \frac{\dfrac{-35}{8} \times \dfrac{12}{7}}{\dfrac{-13}{2} \times \dfrac{15}{-26}}$$

$$= \frac{\dfrac{-5}{2} \times \dfrac{3}{1}}{\dfrac{1}{2} \times \dfrac{15}{2}}$$

$$= \frac{-15}{2} \div \frac{15}{4}$$

$$= \frac{-15}{2} \times \frac{4}{15}$$

$$= -2$$

Answer ....-2............. [3]

primes, HCF, LCM

8   A tiny storeroom has a rectangular floor area of dimensions 234 cm by 144 cm.
     A worker needs to cover the entire floor area with the smallest number of identical of square tiles.

Find

(a)   the length of the side of each square tile,

$$
\begin{array}{c|cc}
2 & 234, & 144 \\
\hline
3 & 117, & 72 \\
\hline
3 & 39, & 24 \\
\hline
 & 13, & 8
\end{array}
$$

$$HCF = 2 \times 3^2$$
$$= 2 \times 9$$
$$= 18$$

Answer ....**18**.......... cm   [2]

(b)   the total number of square tiles he will use.

No. of square tiles = 13 × 8
$$= 104$$

Answer ....**104**..........   [2]

6

9 Two whole numbers, neither having the digit zero in the unit place, when multiplied together equal
exactly 1 000 000.

Find these two numbers, showing your working clearly.

2	1 000 000
2	500000
2	250000
2	125000
2	62500
2	31250
	15625

$\therefore 2^6 \times 15625 = 1 000 000$

$64 \times 15625 = 1 000 000$

Answer ....64......... and ....15625....... [2]

THE END

7