

Grade 7 | Mental Maths | Term 3

Answers

Question 1

- a) $1\ 252 + 1\ 525 = 2\ 777$ ✓
- b) $25 \times 6 = 150$ ✓
- c) $60\% \text{ of } 80 = \frac{6}{10} \text{ of } 80 = 48$ ✓
- d) $4,2 \div 7 = 0,6$ ✓
- e) $5 + 5 \times 5 = 5 + 25 = 30$ ✓
- f) $5\ 000 - 3\ 250 = 1\ 750$ ✓
- g) $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$ ✓
- h) $900 \div 8 = 112 \text{ rem } 4$ ✓ [or 112,5]

Total 8 / 8

Question 2

Complete each number pattern.

- a) $\frac{1}{8}; \frac{1}{4}; \frac{1}{2}; \underline{1}; \underline{2}; \underline{4}$. [$\times 2$] ✓
- b) $1; 1; 2; 3; \underline{5}; \underline{8}; \underline{13}$. [Fibo] ✓
- c) $0,2; 0,3; 0,6; 1,1; \underline{1,8}; \underline{2,7}$. ✓
+0,1 +0,3 +0,5 0,7 +0,9
- d) $3; 12; 48; \underline{192}; \underline{768}$. [$\times 4$] ✓
- e) $169; \underline{144}; 121; 100; 81; \underline{64}$. ✓
 $13 \times 13, 12 \times 12, 11 \times 11, 10 \times 10, 9 \times 9, 8 \times 8$
- f) $300; 285; 270; \underline{255}; \underline{240}$. [-15] ✓
- g) $1; \underline{2}; 3; \underline{4}; 5; \underline{6}; \underline{7}; \underline{8}$. ✓

Total 7 / 7

Question 3

Consider the number sequence:

$4; 8; 12; 16 \dots$

- a) 5th term = 20 ✓
- b) n^{th} term = $4 \times n$ ✓
- c) 20th term = $4 \times 20 = 80$ ✓

Consider the number sequence:

$3; 5; 7; 9 \dots$

- a) 5th term = 11 ✓
- b) n^{th} term = $2 \times n + 1$ ✓
- c) 15th term = $2 \times 15 + 1 = 30 + 1 = 31$ ✓

Total 6 / 6

Question 4

- a) $\underline{5} \times \underline{6} \times 7 = \underline{30} \times 7 = 210$ ✓
- b) $\frac{3}{8} \times \frac{7}{12} = \frac{\cancel{3}^1 \times 7}{8 \times \cancel{12}_4} = \frac{7}{32}$ ✓
- c) $4 \div 6 = \frac{4}{6} = \frac{2}{3} = 0,6$ in decimal form
- d) $20 - 2 \times 3 + 3^2 = 20 - 6 + 9 = 23$ ✓
- e) $8^5 \div 8^3 = \frac{\cancel{8} \times \cancel{8} \times \cancel{8} \times 8 \times 8}{\cancel{8} \times \cancel{8} \times \cancel{8}} = 64$ ✓
- f) $1,02 \div 3 = 0,34$ ✓
- g) $12 \times 10^4 = 120\ 000$ ✓
- h) $\underline{20}\%$ of R90 = R18

Total 8 / 8

Question 5

Write in short form:

- a) $a \times 12 = 12a \checkmark$
- b) $x \times x = x^2 \checkmark$
- c) $p - 2 \times q = p - 2q \checkmark$
- d) $5 \times y \times y + y = 5y^2 + y \checkmark$
- e) $b + a \div b = b + \frac{a}{b} \checkmark$
- f) $2 \times 2 \times t \times t \times t = 4t^3 \checkmark$
- g) $(y \times 3) \div x = \frac{3y}{x} \checkmark$

Total 7 / 7

Question 7

- a) If $x = 2$ then $3x = 3 \times 2 = 6 \checkmark$
- b) If $x = 3$ then $x^2 = 3^2 = 9 \checkmark$
- c) If $y = 0,8$ then $2y = 2 \times 0,8 = 1,6 \checkmark$
- d) If $y = 12$ then $\frac{y}{3} = \frac{12}{3} = 4 \checkmark$
- e) If $a = 4$ then $a^3 = 4^3 = 64 \checkmark$
- f) If $a = 0,3$ then $\frac{1}{2}a = 0,3 \times 0,5 = 0,15 \checkmark$
- g) If $t = 3$ then $t^4 = 3^4 = 81 \checkmark$
- h) If $t = \frac{2}{3}$ then $6t = \frac{2}{3} \times \frac{6}{1} = 4 \checkmark$

Total 8 / 8

Question 6

Write in expanded form:

- a) $10y^2 = 10 \times y \times y \checkmark$
- b) $abc = a \times b \times c \checkmark$
- c) $x^2 + 2x = x \times x + 2 \times x \checkmark$
- d) $3xy^3 = 3 \times x \times y \times y \times y \checkmark$
- e) $z^5 = z \times z \times z \times z \times z \checkmark$
- f) $100k = 100 \times k \checkmark$
- g) $p^2qr^3 = p \times p \times q \times r \times r \times r \checkmark$

Total 7 / 7

Question 8

Consider: $y = 3x + 2$

- a) If $x = \underline{5}$ then
 $y = 3 \times \underline{5} + 2 = 15 + 2 = 17 \checkmark$
- b) If $x = \frac{1}{2}$ then
 $y = 3 \times \underline{\frac{1}{2}} + 2 = 1\frac{1}{2} + 2 = 3\frac{1}{2} \checkmark$ or 3,5
- c) If $x = 0,8$ then
 $y = 3 \times \underline{0,8} + 2 = 2,4 + 2 = 4,4 \checkmark$
- Consider: $b = \frac{1}{2} \times a^2$
- a) If $a = 2$, $a^2 = \underline{4}$
 $b = \frac{1}{2} \times \underline{4} = 2 \checkmark$
- b) If $a = 5$, $a^2 = \underline{25}$
 $b = \frac{1}{2} \times \underline{25} = 12\frac{1}{2} \checkmark$ or 12,5
- c) If $a = 20$, $a^2 = \underline{400}$
 $b = \frac{1}{2} \times \underline{400} = 200 \checkmark$

Total 6 / 6

Question 9

Solve each equation for x .

a) $2 + x = 5$ $x = 5 - 2 = \underline{3}$ ✓

b) $4x = 52$ $x = 52 \div 4 = \underline{13}$ ✓

c) $2x + 3 = 15$ $2x = 12, x = \underline{6}$ ✓

d) $x - 3 = 99$ $x = 99 + 3 = \underline{102}$ ✓

e) $\frac{x}{3} = 6$ $x = 6 \times 3 = \underline{18}$ ✓

f) $5x - 2 = 38$ $5x = 40, x = \underline{8}$ ✓

g) $\frac{x}{4} + 12 = 24$ $\frac{x}{4} = 12, x = \underline{48}$ ✓

Total 7 / 7

Question 11

Complete:

a) A rectangular prism has **8**✓ vertices, **6**✓ faces and **12**✓ edges.

b) A triangular prism has **5**✓ faces, **9**✓ edges and **6**✓ vertices.

c) A square based pyramid has **5**✓ vertices, **8**✓ edges and **5**✓ faces.

d) A pentagonal-based pyramid has **6**✓ faces, **6**✓ vertices and **10**✓ edges.

Total 12 / 12

Question 10

a) A shape's area is 6cm^2 . It is enlarged by a scale factor of 2. The area of the enlarged shape

$$= 6\text{cm}^2 \times 2 \times 2 = 24\text{cm}^2 \quad \checkmark$$

b) A shape's perimeter is 50m. It is reduced by a scale factor of 4. The perimeter of the reduced shape

$$= 50\text{m} \div 4 = \frac{50\text{m}}{4} = 12\frac{2}{4}\text{m} = 12\frac{1}{2}\text{m} \quad \checkmark$$

c) A shape's area is $25,89\text{cm}^2$. It is enlarged by a scale factor of k . The area of the enlarged shape

$$= 25,89 k^2 \text{ cm}^2 \quad \checkmark$$

Total 3 / 3

Question 12

Complete each number pattern.

a) 2 ; 2 ; 4 ; 6 ; 10 ; **16** ; **26** ; **42**. [Fibo] ✓

b) 81, 27, **9**, **3** ; 1; $\frac{1}{3}$; $\frac{1}{9}$. [$\div 3$] ✓

c) 0,2 ; 0,6 ; 1,8 ; **5,4** ; **16,2**. [$\times 3$] ✓

d) 1 ; 8 ; 27 ; **64** ; **125** ; 216.✓
[cubic numbers]

e) 1 ; **3** ; 4 ; **6** ; 9 ; **9** ; 16 ; **12** ; **25** ; **15** ✓

f) $\frac{1}{8}$; $\frac{1}{4} = \frac{2}{8}$; $\frac{3}{8}$; $\frac{4}{8} = \frac{1}{2}$; $\frac{5}{8}$; $\frac{6}{8} = \frac{3}{4}$. [$+\frac{1}{8}$] ✓

g) 0,15 ; 0,45 ; 1,35 ; **4,05** ; **12,15**. [$\times 3$] ✓

Total 7 / 7

Question 13

Consider the number sequence:

1 ; 4 ; 9 ; 16 ...

- a) 5th term = **25** ✓
 b) n^{th} term = $n \times n$ or n^2 ✓
 c) 13th term = $13^2 = 169$ ✓

Consider the number sequence:

2 ; 9 ; 28 ; 65 ; ... 1 ; 8 ; 27 ; 64 ;

- a) n^{th} term = $n^3 + 1$ ✓
 b) 5th term = $125 + 1 = 126$ ✓
 c) 10th term = $1000 + 1 = 1001$ ✓

Total **6 / 6**

Question 15

Solve each equation for y.

- a) $y + 49 = 82$ $y = 82 - 49 = \underline{33}$ ✓
 b) $25y = 100$ $y = 100 \div 25 = \underline{4}$ ✓
 c) $\frac{y}{12} = 60$ $y = 60 \times 12 = \underline{720}$ ✓
 d) $100 - y = 15$ $y = \underline{85}$ ✓
 e) $6y + 3 = 51$ $6y = 48, y = \underline{8}$ ✓
 f) $12y - 9 = 87$ $12y = 96, y = \underline{8}$ ✓
 g) $\frac{y}{8} - 0,025 = 0,6$ $\frac{y}{8} = 0,625, y = \underline{5}$ ✓

Total **7 / 7**

Question 14

Write in short form:

- a) $y \div x = \frac{y}{x}$ ✓
 b) $x \times y + y \times y = xy + y^2$ ✓
 c) $6 \times a - b \times 6 = 6a - 6b$ ✓

Write in expanded form:

- a) $55xyz = 55 \times x \times y \times z$ ✓
 b) $\frac{p}{q} + \frac{q}{p} = p \div q + q \div p$ ✓
 c) $15x^5y = 15 \times x \times x \times x \times x \times x \times y$ ✓

Total **6 / 6**

Question 16

True or False?

If false, give the correct answer

- a) $9^3 = 27$ **False. 729** ✓
 b) $4 + \underline{4} \div 4 = 5$ **True** ✓ $4 + \underline{1} = 5$
 c) $0,8 \times 0,8 = 0,88$ **False. 0,64.** ✓
 d) $\frac{1}{3} = 0,13$ **False. 0,3333... or $0,3\dot{3}$.** ✓
 e) If $x = 0,5$ then $x^2 = 0,25$. **True.** ✓
 f) $3 \times 3 \times x \times x = 33x^2$ **False. $9x^2$** ✓
 g) $a = 2$ and $b = 5$ then $ab = 25$.
False. $ab = 2 \times 5 = 10$. ✓

Total **7 / 7**

Question 17

Write an algebraic expression for each of the following.

- a) The sum a certain number and 5.

$$x + 5 \quad \checkmark$$

- b) Half a certain number is subtracted from 12.

$$12 - \frac{x}{2} \quad \checkmark$$

- c) Triple a certain number is added to 7.

$$7 + 3x \quad \checkmark$$

- d) One third of a number is increased by 1.

$$\frac{x}{3} + 1 \quad \checkmark$$

- e) A number squared is subtracted from half of 30. = 15

$$15 - x^2 \quad \checkmark$$

Total 5 /5

Question 18

Write an algebraic equation for each of the following.

Solve each equation.

- a) The sum a certain number and 18 is 30.

$$x + 18 = 30 \quad \checkmark$$

$$x = 12 \quad \checkmark$$

- b) One third of a certain number is added to 4³. = 64

The sum is seventy.

$$64 + \frac{x}{3} = 70. \quad \checkmark$$

$$\frac{x}{3} = 6 \rightarrow x = 18 \quad \checkmark$$

- c) The product of x and 7 is added to 45. The sum is eighty.

$$7x + 45 = 80 \quad \checkmark$$

$$7x = 35 \rightarrow x = 5 \quad \checkmark$$

Total 6 /6

Question 19

1. A shape's area is $80m^2$.

It is reduced by a scale factor of 4.

The area of the reduced shape

$$= 80m^2 \div 16 = 5m^2 \quad \checkmark$$

2. A square has a length of y .

What is its:

i) perimeter? $4 \times y = 4y \quad \checkmark$

ii) area? $y \times y = y^2 \quad \checkmark$

3. A rectangle has a length of a and a breadth of b .

What is its:

i) area? $a \times b = ab \quad \checkmark$

ii) perimeter? $2(a + b)$ or $2a + 2b \quad \checkmark$

Total 5 /5

Question 20

1. In the expression $2x + y$, $2x + y$

- a) How many terms are there? 2 \checkmark

- b) How many variables are there? 2 \checkmark

- c) What is the coefficient of x ? 2 \checkmark

- d) What is the coefficient of y ? 1 \checkmark

- e) What is the constant? 0 [none] \checkmark

2. In the expression $x^2 + 3x + 5$,

- a) How many terms are there? 3 \checkmark

- b) How many variables are there? 1 [x] \checkmark

- c) What is the constant? 5 \checkmark

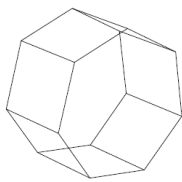
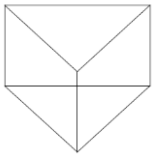
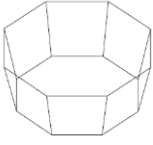
- d) What is the coefficient of x ? 3 \checkmark

- e) What is the coefficient of x^2 ? 1 \checkmark

Total 10 /10

Question 21

Complete the table below.

3-D Shape	No. Faces	No. Vertices	No. Edges
	9 ✓	14 ✓	21 ✓
	5 ✓	6 ✓	9 ✓
	10 ✓	16 ✓	24 ✓

Total 9 / 9

Question 23

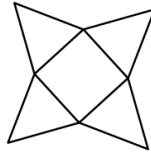
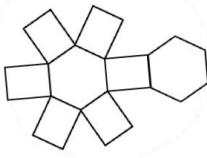
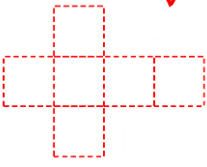
Solve each equation for x .

- a) $x + 40 + 5 = 55$ $x = 55 - 45 = 10$ ✓
- b) $15x = 300$ $x = 20$ ✓
- c) $10x = 6$ $x = 0,6$ ✓
- d) $2x + 40 = 100$ $x = 30$ ✓
- e) $3x - 5 = 13$ $x = 6$ ✓
- f) $0,5x + 4 + 4 = 15$ $x = 14$ ✓
- g) $x^3 = 125$ $x = 5$ ✓

Total 7 / 7

Question 22

Complete the table below.

Net	3-D Object's Name	Pyramid or Prism?
	Square-based pyramid ✓	Pyramid ✓
	Hexagonal Prism ✓	Prism ✓
	Cube	Prism ✓

Total 6 / 6

Question 24

Underline the correct solution for each equation.

- a) $3x - 4 = x$ $x = 1, \underline{2}, 3$ ✓
- b) $2x + 1 = x + 4$ $x = 1, 2, \underline{3}$ ✓
- c) $13 - 2x = 3$ $x = 4, \underline{5}, 7$ ✓
- d) $0,5x + 1 = x$ $x = 0, \underline{2}, 8$ ✓
- e) $x^2 + 1 = 26$ $x = 3, 4, \underline{5}$ ✓
- f) $x^2 - 2x = 3$ $x = 0, 1, \underline{3}$ ✓
- g) $9 - x^3 = 9$ $x = \underline{0}, 10, 100$ ✓

Total 7 / 7

Question 25

- a) $10,9 \times 2 = 21,8$ ✓
b) $9,2 - 2,5 = 6,7$ ✓
c) $1,8 + 0,1 = 1,9$ ✓
d) $8,5 \times 0,2 = 1,7$ ✓
e) $4,4 - 0,2 = 4,2$ ✓
f) $1,4 + 1,7 = 3,1$ ✓
g) $3,7 - 0 = 3,7$ ✓
h) $10 \times 0,4 = 4$ ✓

Total 8 / 8**Question 27**

- a) $1 \div 4 = 0,25$ ✓
b) $5 \times 9 = 45$ ✓
c) $5 \div 10 = 0,5$ ✓
d) $14 + 76 = 90$ ✓
e) $98 + 70 = 168$ ✓
f) $67 - 9 = 58$ ✓
g) $7 \times 5 = 35$ ✓
h) $60 + 64 = 124$ ✓

Total 8 / 8**Question 26**

- a) $10 \div 1000 = 0,01$ ✓
b) $7,8 - 0,6 = 7,2$ ✓
c) $9,3 + 11 = 20,3$ ✓
d) $10,5 \times 4 = 42$ ✓
e) $3,2 \times 1 = 3,2$ ✓
f) $6 + 4,2 = 10,2$ ✓
g) $9,0 \div 10 = 0,9$ ✓
h) $1,1 \times 3 = 3,3$ ✓

Total 8 / 8**Question 28**

- a) $4 \div 0 = \text{undefined}$ ✓
b) $7 \times 0 = 0$ ✓
c) $15 + 100 = 115$ ✓
d) $16 + 67 = 83$ ✓
e) $41 + 34 = 75$ ✓
f) $53 - 16 = 37$ ✓
g) $8 \div 2 = 4$ ✓
h) $7 \times 9 = 63$ ✓

Total 8 / 8

Question 29

Fill in the missing values in each table.

Position	1	2	3	4	n
Value	8	16	24	32✓	8n✓
Position	1	2	3	4	n
Value	5	7	9	11✓	2n + 3✓
Position	1	2	3	4	n
Value	1	4	9	16✓	n ² ✓

Total 6 /6

Question 31

- a) $2^4 = 16$ ✓
- b) $3^3 = 27$ ✓
- c) $9^2 = 81$ ✓
- d) $5^4 = 625$ ✓
- e) $4^4 = 256$ ✓
- f) $6^3 = 216$ ✓
- g) $8^2 = 64$ ✓
- h) $7^3 = 343$ ✓
- i) $100^2 = 10\ 000$ ✓

Total 9 /9

Question 30

Determine the value of the 5th and nth term in each number sequence.

a) 2; 5; 8; 11; ...

5th term = 14 ✓ nth term = 3n - 1 ✓

b) 1; 8; 27; 64; ...

5th term = 125 ✓ nth term = n³ ✓

c) 6; 6²; 6³; 6⁴; ...

5th term = 6⁵ ✓ nth term = 6ⁿ ✓

Total 6 /6

Question 32

- a) $48 \times 2 = 96$ ✓
- b) $1000 - 729 = 271$ ✓
- c) $80 - 12 = 68$ ✓
- d) $768 \div 4 = 192$ ✓
- e) $81 \times 3 = 243$ ✓
- f) $400 \div 2 = 200$ ✓
- g) $8 \times 4 + 10 = 32 + 10 = 42$ ✓
- h) $38 - 7 = 31$ ✓
- i) $2 \times 17 - 10 = 34 - 10 = 24$ ✓

Total 9 /9