

Grade 7 | Mental Maths | Term 4

Answers

Question 1

Fill in the symbol $<$, $>$ or $=$.

- a) $-3 > -5$ ✓
 b) 3 more than $-7 = -4$ ✓
 c) $-9 < 0$ ✓
 d) 5 less than $1^{-4} > -8$ ✓
 e) $-9 + 10 = 1$ ✓
 f) $5 - 7^{-2} > -3$ ✓
 g) $-8 - 1^{-9} < 8 - 1^{=7}$ ✓

Total 7 / 7

Question 3

True or False?

If false, give the correct answer.

- a) A list of questions used in a survey is called data.
 False. It is called a questionnaire. ✓
 b) The information that has been gathered in a survey is called data. True. ✓
 c) A sample is bigger than a population. False. It is a smaller subgroup chosen to represent the whole population. ✓
 d) The mean = $\frac{\text{sum of the scores}}{\text{no. of scores}}$ True. ✓
 e) The range is the middlemost score in an ordered set of data.
 False. This is the median. ✓
 f) The mode is score that occurs most in a data set. True. ✓

Total 6 / 6

Question 2

Fill in the next 2 numbers and the rule that you used.

- a) 1 ; 6 ; 11 ; 16 ; 21 Rule: $+5$ ✓✓
 b) 13 ; 26 ; 52 ; 104 ; 208 Rule: $\times 2$ ✓✓
 c) 66 ; 60 ; 54 ; 48 ; 42 Rule: -6 ✓✓
 d) 256 ; 64 ; 16 ; 4 ; 1 Rule: $\div 4$ ✓✓
 e) 8 ; 6,9 ; 5,8 ; 4,7 ; 3,6 Rule: $-1,1$ ✓✓
 f) $\frac{1}{32}$; $\frac{1}{16}$; $\frac{1}{8}$; $\frac{1}{4}$; $\frac{1}{2}$; 1 Rule: $\times 2$ ✓✓
 g) $3\frac{6}{7}$; $3\frac{3}{7}$; 3 ; $2\frac{4}{7}$; $2\frac{1}{7}$ Rule: $-\frac{3}{7}$ ✓✓

Total 14 / 14

Question 4

Arrange the following integers in ascending order.

- a) $-3, 9, 0, -8$ $-8, -3, 0, 9$ ✓
 b) $13, 1, -20, -75$ $-75, -20, 1, 13$ ✓
 c) $-5, 5, 0, -1$ $-5, -1, 0, 5$ ✓
 d) $-33, 33, 3, -3$ $-33, -3, 3, 33$ ✓

Arrange the following integers in descending order.

- a) $-3, 9, 0, -8$ $9, 0, -3, -8$ ✓
 b) $11, -4, 2, -14$ $11, 2, -4, -14$ ✓
 c) $2, 9, -61, -4$ $9, 2, -4, -61$ ✓
 d) $-43, 99, 7, -99$ $99, 7, -43, -99$ ✓

Total 8 / 8

Question 5

Complete each sequence:

- a) 1 ; 8 ; 27 ; 64 ; **125** ✓ (cubes)
- b) **1** ; **2** ; **2** ; **4** ; **3** ; **6** ; **4** ; **8** ✓ (2 patterns)
- c) 64 ; 49 ; 36 ; 25 ; **16** ; **9** ; **4** ✓ (squares)
- d) 1 ; 1 ; 2 ; 3 ; 5 ; **8** ; **13** ; **21** ✓ (Fibonacci)
- e) **5** ; **4** ; **10** ; **3** ; **15** ; **2** ; **20** ✓ (2 patterns)
- f) 2,4 ; 1,2 ; 0,6 ; **0,3** ; **0,15** ✓ ($\div 2$)
- g) 1 ; 3 ; 4 ; 7 ; **11** ; **18** ; **29** ✓ (Fibonacci)

Total 7 / 7

Question 7

Fill in the missing values in each flow diagram.

a)	7 8	---> --->	$\times 11$	---> 77 ✓ ---> 88 ✓
b)	0,3 0,8	---> --->	+1,6 ✓	---> 1,9 ---> 2,4
c)	0,5 ✓ 0,25	---> --->	$\times 4$	---> 2 ---> 1 ✓
d)	-6 ✓ -10	---> --->	-2	---> -8 ---> -12 ✓
e)	0,2 0,6 ✓	---> --->	$\times 0,3$	---> 0,06 ✓ ---> 0,18
f)	7 5	---> --->	$\times(-3) \rightarrow +4$	---> -17 ✓ ---> -11 ✓
g)	0,06 0,7	---> --->	$\div 10$ ✓	---> 0,006 ---> 0,07
h)	$\frac{1}{2}$ $\frac{1}{3}$	---> --->	$-\frac{1}{6}$	---> $\frac{2}{6} = \frac{1}{3}$ ✓ ---> $\frac{1}{6}$ ✓

Total 14 / 14

Question 6

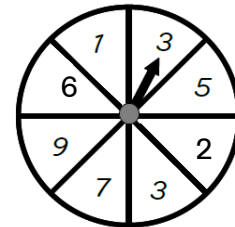
Write in short form, where possible:

- a) $15 \times (-y) = -15y$ ✓
- b) $7 \times a \times 3 = 21a$ ✓
- c) $(-4) \times (-b) = 4b$ ✓
- d) $-8 + 5 - p = -3 - p$ ✓
- e) $5 \times y \times z = 5yz$ ✓
- f) $-y \times 6 + 10 = -6y + 10$ ✓
- g) $7 + q - p = 7 + q - p$ ✓

Total 7 / 7

Question 8

Using the number spinner given, what is the probability of spinning a/an:



- a) 3? $\frac{2}{8} = \frac{1}{4} = 25\%$ ✓
- b) multiple of 1?
 $\frac{8}{8} = 1 = 100\%$ ✓
- c) odd number? $\frac{6}{8} = \frac{3}{4} = 75\%$ ✓
- d) even number? $\frac{2}{8} = \frac{1}{4} = 25\%$ ✓
- e) composite number? $\frac{2}{8} = \frac{1}{4} = 25\%$ ✓
(6, 9)
- f)* factor of 6? $\frac{5}{8} = 62,5\%$ ($\frac{1}{8} = 12,5\%$) ✓
(1, 2, 3, 3, 6)
- g) 10? $\frac{0}{8} = 0\%$ ✓

Total 7 / 7

Question 9

Fill in the missing values in each table below:

a)	position	1	2	3	4	n	10
	value	3	6	9	12✓	3n✓	30✓
b)	position	1	2	3	4	n	8
	value	6	6 ²	6 ³	6 ⁴ ✓	6 ⁿ ✓	6 ⁸ ✓
c)	position	1	2	3	4	n	10
	value	0,5	1	1,5	2✓	$\frac{n}{2}$ ✓	5✓
d)	position	1	2	3	4	n	12
	value	0	3	8	15✓	n ² -1✓	143✓

Total 12 / 12

Question 11

Determine the value of:

- a) $10y$ if $y = -12 \rightarrow 10y = 10(-12) = -120$ ✓
- b) $-7p$ if $p = 4 \rightarrow -7p = (-7)(4) = -28$ ✓
- c) $-3x$ if $x = -9 \rightarrow -3x = -3(-9) = 27$ ✓
- d) $2xy$ if $x = 7$ and $y = -5$
 $\rightarrow 2xy = 2(7)(-5) = -70$ ✓
- e) xy if $x = -3$ and $y = -4$
 $\rightarrow xy = (-3)(-4) = 12$ ✓
- f) $10p - 17$ if $p = 10$
 $\rightarrow 10p - 17 = 10(10) - 17 = 100 - 17 = 83$ ✓
- g) $1 + 5a$ if $a = 3$
 $\rightarrow 1 + 5a = 1 + 5(3) = 1 + 15 = 16$ ✓
- h) $3z - 4y$ if $z = 10$ and $y = 5$
 $\rightarrow 3z - 4y = 3(10) - 4(5) = 30 - 20 = 10$ ✓

Total 8 / 8

Question 10

Determine the mode, median, mean and range for each data set.

- a) $11 \ 11 \ 5 \ 3 \ 15 \rightarrow 3 \ 5 \ 11 \ 11 \ 15$
 Mode = 11 ✓
 Median = 11 ✓
 Mean = $\frac{3+5+11+11+15}{5} = \frac{45}{5} = 9$ ✓
 Range = $15 - 3 = 12$ ✓
- b) $1 \ 7 \ 21 \ 30 \ 21 \rightarrow 1 \ 7 \ 21 \ 21 \ 30$
 Mode = 21 ✓
 Median = 21 ✓
 Mean = $\frac{1+7+21+21+30}{5} = \frac{80}{5} = 16$ ✓
 Range = $30 - 1 = 29$ ✓

Total 8 / 8

Question 12

Solve each equation for x .

- a) $x - 5 = 7 \rightarrow x = 7 + 5 = 12$ ✓
- b) $x + 3 = 10 \rightarrow x = 10 - 3 = 7$ ✓
- c) $x - 2 = -4 \rightarrow x = -4 + 2 = -2$ ✓
- d) $4x = -8 \rightarrow x = \frac{-8}{4} = -2$ ✓
- e) $-5x = -2 \rightarrow x = \frac{-2}{-5} = \frac{2}{5} = 0,4$ ✓
- f) $2x - 4 = -2$
 $\rightarrow 2x = 2 \rightarrow x = 1$ ✓
- g) $9 - 2x = 5$
 $\rightarrow -2x = -4 \rightarrow x = 2$ ✓
- h) $-3 - 3x = 6$
 $\rightarrow -3x = 9 \rightarrow x = -3$ ✓

Total 8 / 8

Question 13

Write an algebraic expression for each of the following.

a) 10 is subtracted from x .

$$x - 10 \checkmark$$

b) The sum of 9 and $-p$.

$$9 + (-p) = 9 - p \checkmark$$

c) y is decreased by 7.

$$y - 7 \checkmark$$

Consider the expression

$$a - 2 + p.$$

a) No. terms = 3 \checkmark

b) No. variables = 2 \checkmark

c) What is the constant? -2 \checkmark

Total 6 / 6

Question 15

If $a = 6$, $b = 2$, $x = 1$ and $y = 5$, determine the value of:

a) $-3y + 7$ $(-3)(5) + 7 = -15 + 7 = 8 \checkmark$

b) $b^2 - 1$ $2^2 - 1 = 4 - 1 = 3 \checkmark$

c) $15 \div y$ $15 \div 5 = 3 \checkmark$

d) a^2x^5b $(6^2)(1)(2) = (36)(2) = 72 \checkmark$

e) $abxy$ $(6)(2)(1)(5) = (12)(5) = 60 \checkmark$

f) $4y \div b$ $(4)(5) \div 2 = 20 \div 2 = 10 \checkmark$

g) $-10a \div 4$

$$(-10)(6) \div 4 = -60 \div 4 = -15 \checkmark$$

h) $150 \div (x + 7b)$

$$150 \div (1 + 7(2)) = 150 \div 15 = 10 \checkmark$$

i) $-y^3 + xy$ $-125 + 5 = -120 \checkmark$

j) $2a^2 \div (x + b)$ $2(6^2) \div (1 + 2)$

$$= 2(36) \div 3 = 72 \div 3 = 24 \checkmark$$

Total 10 / 10

Question 14

Use the given rules to complete each table. (answers must be in simplest form)

a)	Rule: $c = 2b + 0,5$				
b	1	2	3	4	9
c	2,5 \checkmark	4,5 \checkmark	6,5 \checkmark	8,5 \checkmark	18,5 \checkmark
b)	Rule: $t = 0,03r$				
r	1	2	3	4	7
t	0,03 \checkmark	0,06 \checkmark	0,09 \checkmark	0,12 \checkmark	0,21 \checkmark
c)	Rule: $t = p^3 - 2$				
p	1	2	3	4	5
t	-1 \checkmark	6 \checkmark	25 \checkmark	62 \checkmark	123 \checkmark

Total 15 / 15

Question 16

Fill in the missing numbers.

a) $3 - (-8) - 5 = 3 + 8 - 5 = 6 \checkmark$

b) $15 - 20 = -20 + 15 \checkmark$

c) $8 + (-8)(2) - 5(-4) = 8 - 16 + 20 = 12 \checkmark$

d) $5 \times (-3) = -15 \checkmark$

e) $(-6)(-8) = 48 \checkmark$

f) $-1 - 2 - 5 = -5 - 2 - 1 \checkmark$

g) $9 - (-7) = 9 + 7 \checkmark$

h) $-5 \times 7 \times 2 = -70 \checkmark$

i) $(-9)^2 = 81 \checkmark$

j) $(-3)^3 = -27 \checkmark$

Total 10 / 10

Question 17

Determine the rule for each table.

a)	t	1	2	3
	p	1,4	2,8	4,2

Rule: $p = 1,4t$ ✓

b)	t	1	2	3
	p	2	5	10

Rule: $p = t^2 + 1$ ✓

c)	t	1	2	3
	p	-2	3	8

Rule: $p = 5t - 7$ ✓

Total 3 / 3

Question 19

Write an algebraic expression for each word sentence.

- a) q bags of rice can be filled in 9 hours. How many bags can be filled per hour?

$$q \text{ bags} \div 9\text{h} = \frac{q}{9} \text{ bags/h} \quad \checkmark$$

- b) 15kg of beef costs R y . What is the cost per kg?

$$Ry \div 15\text{kg} = R \frac{y}{15} /\text{kg} \quad \checkmark$$

- c) What is the average speed if 20 z kilometres is covered in 100 b hours? $S = \frac{D}{T} = \frac{20z}{100b} = \frac{z}{5b} \text{ km/h} \quad \checkmark$

- d) The length of a rectangle is 7 x and its width is 2 y . What is the area of the rectangle?

$$A = (7x)(2y) = 14xy \quad \checkmark$$

Total 4 / 4

Question 18

1. The following temperatures were recorded in Sutherland on Monday, Tuesday and Wednesday respectively at 1a.m.:
3°C, -1°C, -4°C.

- a) Which day was the coldest?

Wednesday. ✓

- b) Which day was the warmest?

Monday. ✓

- c) How much warmer was Monday than Wednesday?

$$3^\circ\text{C} - (-4^\circ\text{C}) = 3^\circ\text{C} + 4^\circ\text{C} = 7^\circ\text{C} \quad \checkmark$$

- d) The weather forecast shows that Friday's temperature will be 50% colder than Wednesday's temperature. What is the Friday's temperature predicted to be?

$$50\% \text{ of } -4^\circ\text{C} = -2^\circ\text{C} \rightarrow -4^\circ\text{C} + (-2^\circ\text{C}) = -6^\circ\text{C} \quad \checkmark$$

Total 4 / 4

Question 20

Solve each equation for x .

a) $x - 4 = 7 \quad x = 7 + 4 = 11 \quad \checkmark$

b) $x + 3 = 15 \quad x = 15 - 3 = 12 \quad \checkmark$

c) $7 - x = 10 \quad -x = 10 - 7 = 3$
 $x = -3 \quad \checkmark$

d) $-4x = -16 \quad x = 4 \quad \checkmark$

e) $\frac{x}{3} = -3 \quad x = -9 \quad \checkmark$

f) $\frac{36}{x} = -12 \quad x = -3 \quad \checkmark$

Total 6 / 6

Question 21

Fill in the missing values in each table below:

a)	position	1	2	3	4	n	12	a)	Tally marks	Frequency
	value	-6	-12	-18	-24 ✓	-6n ✓	-72 ✓		++++ ✓	5
b)	position	1	2	3	4	n	20	b)		1 ✓
	value	-7	-6	-5	-4 ✓	n-8 ✓	12 ✓		++++ ✓	7
c)	position	1	2	3	4	n	10	d)	++++ +++++	10 ✓
	value	-7	-14	-21	-28 ✓	-7n ✓	-70 ✓			2 ✓

Total 9 / 9

Total 5 / 5

Question 23

Complete:

1. There are some blue, green and white balls in a bag containing 20 balls in total.

a) I have a 20% chance of picking a green ball. ($20\% = \frac{20}{100} = \frac{1}{5}$)

The no. of green balls = $\frac{1}{5} \times 20 = 4$ ✓

b) How many blue balls are in the bag if $P(\text{blue}) = \frac{3}{4}$?

No. of blue balls = $\frac{3}{4} \times 20 = 15$ ✓

c) What is the probability of drawing a white ball?

No. white balls = $20 - 15 - 4 = 1$

$P(\text{white}) = \frac{1}{20} \times 100 = 5\%$ ✓

Total 3 / 3

Question 24

Solve each equation for x .

a) $\frac{x}{4} = 2 \rightarrow x = 8$ ✓

b) $\frac{x}{6} = 4 \rightarrow x = 24$ ✓

c) $\frac{x}{5} = -10 \rightarrow x = -50$ ✓

d) $\frac{x}{5} - 5 = -10$

$\rightarrow \frac{x}{5} = -5 \rightarrow x = -25$ ✓

e) $\frac{x}{3} + 7 = 19$

$\rightarrow \frac{x}{3} = 12 \rightarrow x = 36$ ✓

f) $\frac{x}{7} + 10 = 12$

$\rightarrow \frac{x}{7} = 2 \rightarrow x = 14$ ✓

g) $\frac{x}{4} - 7 = 13$

$\rightarrow \frac{x}{4} = 20 \rightarrow x = 80$ ✓

Total 7 / 7

Question 25

- a) $1 + (-2) = 1 - 2 = -1$ ✓
- b) $6 + 5 = 11$ ✓
- c) $-6 - (-10) = -6 + 10 = 4$ ✓
- d) $-10 + (-5) = -10 - 5 = -15$ ✓
- e) $-8 + (-6) = -8 - 6 = -14$ ✓
- f) $3 - (-3) = 3 + 3 = 6$ ✓
- g) $3 - 10 = -7$ ✓
- h) $7 - (-5) = 7 + 5 = 12$ ✓

Total 8 / 8

Question 27

- a) $7,9 - 6,4 = 1,5$ ✓
- b) $9,1 - 3,8 = 5,3$ ✓
- c) $1,9 + 0,9 = 2,8$ ✓
- d) $8,2 + 10,9 = 19,1$ ✓
- e) $8,9 - 0,2 = 8,7$ ✓
- f) $6,7 + 8,5 = 15,2$ ✓
- g) $10,9 - 0,9 = 10$ ✓
- h) $3,4 - 0,1 = 3,3$ ✓

Total 8 / 8

Question 26

- a) $-6 \times (-5) = 30$ ✓
- b) $-6 \times 0 = 0$ ✓
- c) $9 \times 5 = 45$ ✓
- d) $-6 \times 3 = -18$ ✓
- e) $(-2)(10) = -20$ ✓
- f) $1 \times (-9) = -9$ ✓
- g) $(-7)(-3) + 1 = 21 + 1 = 22$ ✓
- h) $-4(-5) = 20$ ✓

Total 8 / 8

Question 28

Solve each equation for y.

- a) $y + 22 = 15$ $y = 15 - 22 = -7$ ✓
- b) $5 - y = -20$ $y = 25$ ✓
- c) $17y = 340$ $y = 20$ ✓
- d) $0,5y + 30 = 100$ $y = 140$ ✓
- e) $y - 200 = 1\ 200$ $y = 1\ 400$ ✓
- f) $10 - 3y = 1$ $y = 3$ ✓
- g) $2y + 3y + 6y = 132$
 $11y = 132 \rightarrow y = 12$ ✓

Total 7 / 7

Question 29

Fill in the next 2 numbers and the rule that you used.

- a) 0,3 ; 0,6 ; 1,2 ; **2,4 ; 4,8** Rule: $\times 2$ ✓✓
- b) 9,6 ; 9,2 ; 8,8 ; **8,4 ; 8** Rule: $-0,4$ ✓✓
- c) 1,4 ; 2,5 ; 3,6 ; **4,7 ; 5,8** Rule: $+1,1$ ✓✓
- d) 891 ; 297 ; 99 ; **33 ; 11** Rule: $\div 3$ ✓✓
- e) 8 ; 10,3 ; 12,6 ; **14,9 ; 17,2** Rule: $+2,3$ ✓✓
- f) 187,5 ; 37,5 ; 7,5 ; **1,5 ; 0,3** Rule: $\div 5$ ✓✓
- g) 0,2 ; 0,6 ; 1,8 ; **5,4 ; 16,2** Rule: $\times 3$ ✓✓

Total **14** /14

Question 31

Fill in the next 2 numbers of each number sequence.

- a) 2 ; -2 ; -6 ; **-10 ; -14** ✓ [-4]
- b) -50 ; -30 ; -10 ; **10 ; 30** ✓ [+20]
- c) -1 ; -5 ; -25 ; **-125 ; -625** ✓ [$\times 5$]
- d) 325 ; 225 ; 125 ; **25 ; -75** ✓ [-100]
- *e) -8 ; -4 ; -2 ; **-1 ; -0,5** ✓ [$\div 2$]
- f) -111 ; -110 ; -109 ; **-108 ; -107** ✓^[+1]
- g) -3 ; -6 ; -12 ; **-24 ; -48** ✓ [$\times 2$]

Total **7** /7

Question 30

- a) $-3 + 0 = -3$ ✓
- b) $-5 \times (-8) = 40$ ✓
- c) $-7 + 2 = -5$ ✓
- d) $-4 - 10 = -14$ ✓
- e) $9 - 5 = 4$ ✓
- f) $4 - (-7) = 11$ ✓
- g) $8 \times (-3) = -24$ ✓
- h) $-8 + 3 = -5$ ✓

Total **8** /8

Question 32

- a) $9,4 - 8,1 = 1,3$ ✓
- b) $7,4 + 5,6 = 13,0$ ✓
- c) $8,3 \times 3 = 24,9$ ✓
- d) $8,4 \times 7 = 58,8$ ✓
- e) $10,3 - 5,4 = 4,9$ ✓
- f) $1,9 \times 8 = 15,2$ ✓
- g) $7,3 + 0,6 = 7,9$ ✓
- h) $0,8 + 10,9 = 11,7$ ✓

Total **8** /8