

**Year 8 MATHEMATICS EXAMINATION  
SEMESTER 1 2017**

**QUESTION AND ANSWER BOOKLET**

<b>STUDENT NAME:</b>
<b>TEACHER:</b>
<b>DATE:</b>

**TIME ALLOWED FOR THIS PAPER**

**Reading time before commencing work: 10 minutes**

**Working time for this paper: 90 minutes**

***MATERIAL TO BE PROVIDED BY THE SUPERVISOR***

- This Question/Answer Booklet

***MATERIAL TO BE PROVIDED BY THE CANDIDATE***

- Pen/pencil for answering questions.
- Erasing stationery.
- Up to two scientific calculators.
- Written notes on **one** unfolded A4 sized paper; can be double-sided.

***TOTAL QUESTIONS:***

***TOTAL MARKS: 70***

***Section 1:***

***NON-CALCULATOR***

***23 questions, 30 marks***

***Section 2:***

***CALCULATOR***

***28 questions, 40 marks***

**AT THE END OF THE EXAMINATION**

Attach any extra sheets used to this Question/Answer booklet.

**IMPORTANT NOTE TO CANDIDATES**

**No other items may be taken into the examination room.**

**It is your responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor BEFORE reading any further.**

Section 1: NON-CALCULATOR (Total 28 Marks)

1. (1)

The temperature in a mountain hut is 15C at 9.00 pm on Monday night. It drops by 2C per hour for 11 hours and then the next morning rises by 1C per hour for the next 4 hours. What is the temperature at midday on Tuesday?



-3C

31C

-5C

8C

2. (1)

5 × 180 is equal to:

5 × 90

5 × 360

10 × 90

10 × 360

3. (1)

The HCF and LCM (in that order) of 12 and 18 are:

36 and 12

6 and 18

3 and 9

6 and 36

4. (1)

Two numbers have a sum of -1 and a product of -6. These numbers are:

-2 and 3

4 and -5

-2 and 4

2 and -3

5.

(1)

$6 \times 5 + (-4)^2$  evaluates to:

46

7

39

8

6.

(1)

Which statement is correct?

$-12 > -4$

$-12 > 4$

$12 < -4$

$12 > -4$

7.

(1)

Which number below is divisible by 6?

538

540

542

544

8.

(1)

500 mm converted to metres is:

0.005 m

0.5 m

5 m

50 m

9.

(1)

What is the probability of rolling a 4 on a six-sided die?

$\frac{1}{6}$

$\frac{3}{6}$

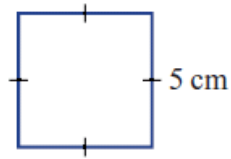
$\frac{1}{5}$

$\frac{3}{4}$

10.

(1)

What is the area of this shape?



0.0039 cm<sup>2</sup>

25 cm<sup>2</sup>

393 cm<sup>2</sup>

2550 cm<sup>2</sup>

11.

(1)

In the expression  $7a - 2ab - b + 4b^2$ , the coefficient of  $b$  is:

5

7

-1

8

12.

(1)

Which of the following pairs are like terms?

$10a$  and  $-8a^2$

$6m$  and  $mn$

$8st^2$  and  $-9s^2t$

$4pq^2$  and  $7q^2p$

13.

(1)

Expand the brackets in the expression and then combine like terms.

$$5(3 - 6k)$$

15

$15 - 30k$

$5 - 6k$

$20k - 5$

14.

(1)

The sum of  $k$  and 9 divided by 5 can be written as:

$$\frac{1}{5} \times k + 9$$

$$\frac{k}{5} + 9$$

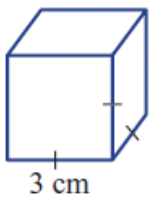
$$\frac{k+9}{5}$$

$$\frac{1}{5} \times k \times 9$$

15.

(1)

Find the volume of this prism:



$$0.09 \text{ cm}^3$$

$$81 \text{ cm}^3$$

$$93 \text{ cm}^3$$

$$27 \text{ cm}^3$$

Short Answer Section Non-Calculator

16.

(2)

If  $a = -5$ ,  $b = 4$  and  $c = -2$ , evaluate these expressions.

a)  $a + b + c$

b)  $a^2 - c$

17.

(4)

a Use a mental strategy to work out this product and quotient.

i  $6 \times 73$

ii  $176 \div 8$

b Use an algorithm to find this quotient and product.

i  $2148 \div 4$

ii  $509 \times 23$

18.

(2)

Evaluate the following.

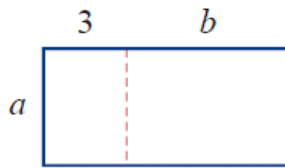
a  $8 - (-2) \times (-7 + 3)$

b  $-3 \times 10 \div (-5) \times (-9)$

19.

(1)

Write an expression for the area of the following rectangle is:



20.

(1)

A parallelogram has an area of  $26 \text{ m}^2$  and its base length is 13 m. What is its perpendicular height?

21.

(1)

The width of a rectangle is 6cm and its perimeter is 26 cm. What is the area of the rectangle?

22.

(2)

Grace sells tropical fish. Last week Grace counted the fish and then she added 3 dozen new fish. She sold 17 fish the next day. Over the following week fin rot claimed 13 fish, which had to be thrown away. The next week Grace added another 10 fish. When she then counted the fish in the tank there were 223. How many were in the tank when she first counted them?

23.

(2)

Gwen likes soda. Her local store gives a free bottle for every 5 bottles recycled. If she has collected 77 empty bottles, how many bottles of soda will she be able to drink free of charge? (It might take her more than 1 day.)



STOP

Section 1: CALCULATOR (Total 28 Marks)

1. (1)

A submarine at 120 m below sea level rose 50 m. What is the position of the submarine relative to sea level?

70 m

10 m

90 m

50 m

2. (1)

A movie starts at 3:35pm and runs for 2 hours and 27 minutes. What time should the movie end?

6:02 pm

5:35 pm

12:02 am

5:05 pm

3. (1)

Ashley borrowed \$150, repaid \$70, and borrowed another \$20. What is Ashley's balance?

-\$100

-\$90

\$150

\$20

4. (1)

Which of the following is correct?

- 12 and 18 are both factors of 48.
- 12 and 18 are both multiples of 48.
- 12 and 16 are both factors of 48.
- 12 and 16 are both multiples of 48.



5.

(1)

What is the Highest Common Factor of: 24 and 30

9

8

1

6

6.

(1)

45 divided by what number will give a remainder of 3 when:

15

18

10

6

7.

(1)

$$y + y + y + y = ?$$

$4 + y$

$4y$

$y^4$

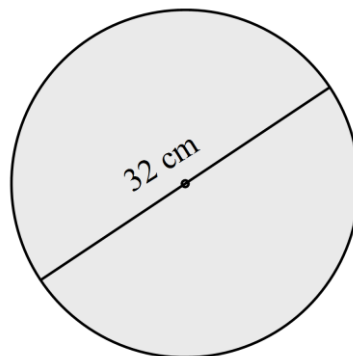
$\frac{y}{4}$

8.

(1)

What is the area of the circle?

- 50.3 cm<sup>2</sup>
- 100.5 cm<sup>2</sup>
- 804.2 cm<sup>2</sup>
- 3 217.0 cm<sup>2</sup>

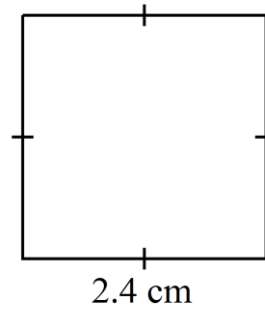


9.

(1)

What is the area of the square?

- 9.6 cm<sup>2</sup>
- 576 cm<sup>2</sup>
- 96 cm<sup>2</sup>
- 5.76 cm



10.

(1)

With what integer can  $x$  be replaced with to make this statement true:

$$4(5 - x) = 8$$

-3

1

3

7

11.

(1)

Which number below is divisible by 6?

538

540

542

544

12.

(1)

$$-7 + -12 =$$

-5

5

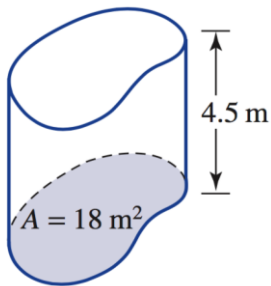
-19

19

13.

(1)

Find the volume of each of the following.



$81 \text{ m}^3$

$48 \text{ m}^3$

$100 \text{ m}^3$

5 cm

14.

(1)

The area ( $A$ ) of a rectangle of length  $l$  and width  $w$  can be found using the formula

$A = lw$ . Find the width of a rectangle if  $A = 65 \text{ cm}^2$  and  $l = 13 \text{ cm}$ .

9.6 cm

5 cm

16 cm

5.76 cm

15.

(1)

A single coin is tossed. What is the probability (as a decimal) of a tail showing?

0.2

0.4

0.5

0.8

## Short Answer Section Calculator

16.

(1)

When  $a = 5$  and  $b = 3$  are substituted into the equation  $2a - 2b$ , the solution to the equation is:

17.

(1)

What number has the prime factorisation below?

$$2^2 \times 3^3 \times 5^2 = \boxed{\phantom{000}}$$

18.

(2)

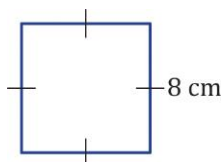
Use a factor tree to write the numbers 36 as a product of prime factors:

19.

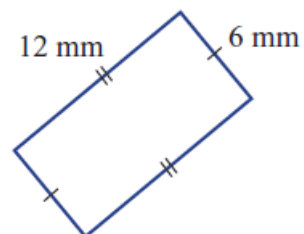
(2)

Calculate the area of the following shapes:

a)



b)



**20.****(3)**

**Aussie Rules Football is played in many Australian states. The scoring for the game is in Goals ( $G$ ) and Behinds ( $B$ ). Each Goal ( $G$ ) scores six points and each behind ( $B$ ) scores one point. To calculate the total number of points ( $P$ ) scored by a team use the following rule:**  
 **$P = 6G + B$**

- a) Name the variables in the rule.
- b) A team scored 11 goals and 10 behinds. How many points is this?
- c) A second team scored nine goals and 18 behinds. How many points is this?

**21.****(3)**

**Simplify the following by collecting like terms.**

- a)  $-6a + 3a + a$
- b)  $3 \times 15v$
- d)  $-8q - 16qr$

**22.****(3)**

**Expand the following and then simplify by collecting like terms.**

- a)  $5(4w - 2)$
- b)  $9(3m - 3) + 12$
- d)  $13(2d - 1) + 12(d + 3)$

23.

(2)

Factorise the following expressions.

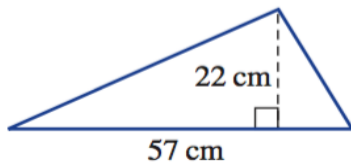
a)  $3p - 18$

b)  $-55jk - 77jh$

24.

(1)

Find the area of the following triangle.

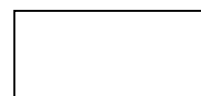
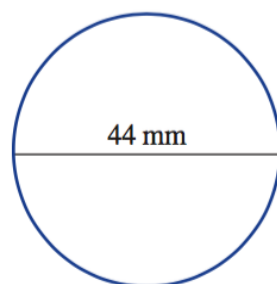


25.

(1)

Find the circumference of the circle.

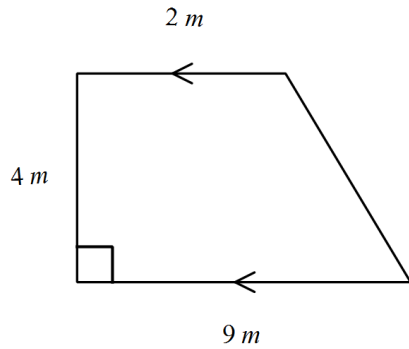
a



26.

(2)

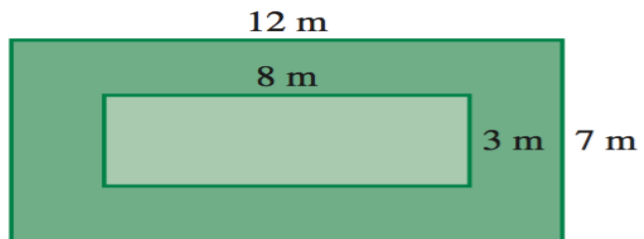
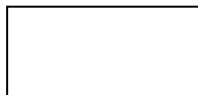
Calculate the area of the following shape:



27.

(2)

Cameron was mowing his backyard, when he stubbed his toe and had to come inside. If he'd mowed a 2 m strip around the outside before he stopped, what area did his sister need to mow when she finished the job for him?

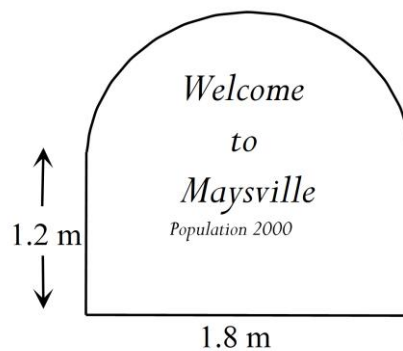
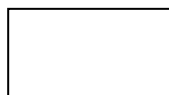


28.

(2)

A sign to welcome visitors to a town is made of sheet metal in the shape shown. What area of metal was used for the sign?

Area =



**END OF EXAMINATION**