

Mathematics Assessment: Term 1 and 2

Grade 7

Examiner: Mrs J Hayman

100 marks

Calculators may NOT be used.

1. Choose a number from one of the stars that is...



- 1.1.1. ...a prime number. (1)
- 1.1.2. ...a multiple of 12. (1)
- 1.1.3. ...a factor of 12. (1)
- 1.1.4. ...a square number that is odd. (1) (4)

2. There are 15 cars racing against each other in an underground street race. Each is numbered from 1 to 15. No-Good-Dirty-Harry has fixed the race and has inside information about the cars. He has sabotaged all the cars except four of them. These are sure to be the top 4 in the race.

No-Good-Dirty-Harry ain't known for being smart- he wrote himself a note to remind himself of the top 4- but he dropped it... and YOU found it!

See if you can decode No-Good-Dirty-Harry's note and figure out the top 4...

- ❖ One is a factor of 25
- ❖ Two are multiples of 4
- ❖ Two are multiples of 3
- ❖ The total of the four numbers is greater than 32 but less than 36

(Smudged)... *The winner is a multiple of 3 and of 4* (4)

3. Using prime factors or otherwise, find the **HCF**(Highest Common Factor) and **LCM** (Lowest Common Multiple) of **18** and **24**. (4)

4. Here is a list showing the number of certain species of animals in a game reserve:

Lions: 17
Wildebeest: 241
Springbok: 358
Warthog: 112

- 4.1. Calculate the total number of animals in the reserve at the time the list was made. (2)
4.2. If each lion needs to eat one springbok a week, how many springbok will the lions eat in one month? (1)
4.3. If no baby springbok are born, how many will be left after 3 months? (2) (5)

5. A lone lion leaves the pride and chases a herd of wildebeest, but they work together and escape. He is tired and realises that he needs to make it to water before he runs out of energy.

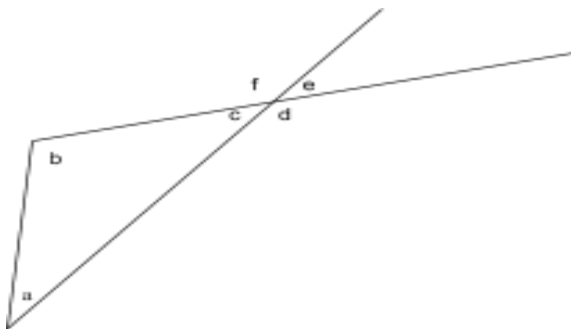
- ★ The river is 25km away.
- ★ He can move at an average of 10km/h.
- ★ He starts moving towards the river at 9am.

- 5.1. How long will he take to reach the river? (2)
5.2. By midday, 12pm, it will be too hot to carry on and he may not make it. Will he reach the river? If so, what time? (1) (3)

6. Determine the value of the following without the use of a calculator:

- 6.1. $(7 - 5)^3$ (1)
6.2. $7^2 - 5^2$ (2)
6.3. $10^2 - (4^3 + 6^2)$ (3)
6.4. $11 - 3\sqrt{64}$ (2)
6.5. $(\sqrt[3]{125})^2$ (2)
6.6. $(4^2 + \sqrt{81}) \div 5$ (3)
6.7. $1^4 + 0^3 + 4^1$ (2) (15)

7. To answer the following questions, look at the diagram below.



- 7.1. Which angles are obtuse? (1)

- 7.2. What type of angle is angle c ? (1)
- 7.3. What do we call a triangle that has no equal sides and no equal angles? (1) (5)
- 8.
- 8.1. Draw and correctly label angle $P\hat{Q}R = 125^\circ$. (2)
- 8.2. Draw another line parallel to PQ. Label it FG. (1)
- 8.3. Draw PR such that triangle PQR is an isosceles triangle. (1) (4)

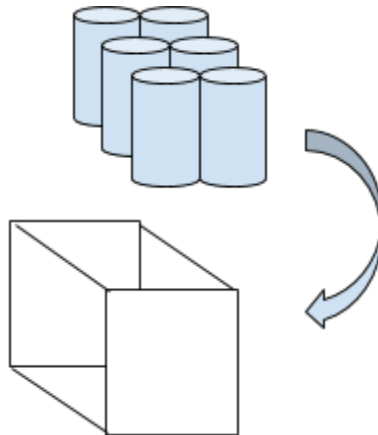
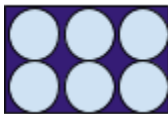
9. A box is a rectangular prism. If you wanted to make a box with a volume of 24cm^3 , there are a few ways you could do it.
 Try to think of combinations that will create different size boxes. One possible combination has been given for you.

Hint: L=2cm , W=6cm , H=2cm is NOT an answer! That box will look the same as the example if you rotate it.

Length	Width	Height
2cm	2cm	6cm

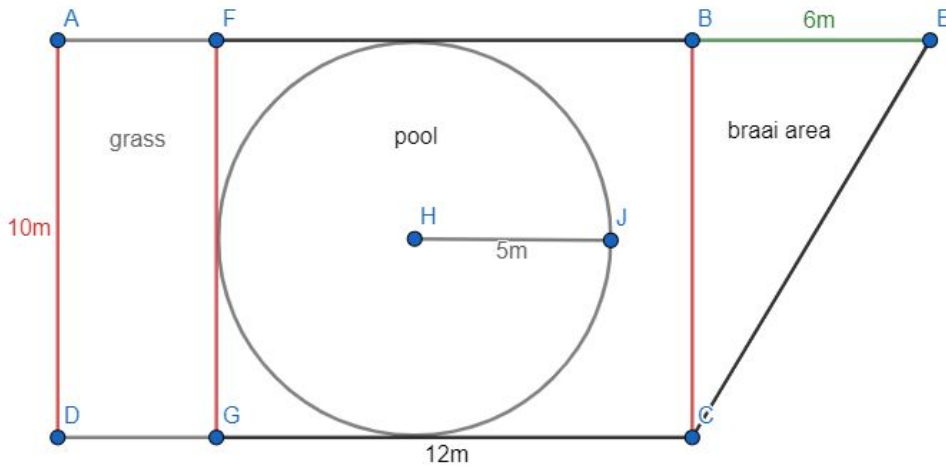
(3)

10. Six cans of cooldrink fit into one rectangular box.
 The box has a length of 36cm and a width of 24cm.



- 10.1. What is the radius of one can? (2)
- 10.2. To fit the cans inside and close comfortably, the box must be 10cm high.
 What is the volume of the box? (3)
- 10.3. If you pay R60 for the box and then sell the cans to your friends at R15 a can, how much profit will you make? (2) (7)

11. Look at the diagram below. It shows the plans to build a circular pool in a garden.



The total area of the grass and pool area, not including the braai area, is 160 m^2 .

11.1. First, fill in the gaps with the correct words or symbols.

11.1.1. Angle \widehat{DAE} is equal to 90° . We say line AD is _____ to line AB.

11.1.2. Lines AB and DC will never touch, no matter how far you extend them.
We say line AB is _____ to line DC.

11.1.3. The outside edge (perimeter) of a circle is called the _____. (3)

11.2. Find the length of AB, the fence around the pool and grass. (2)

11.3. Find the length of DG, the width of the grass. (1)

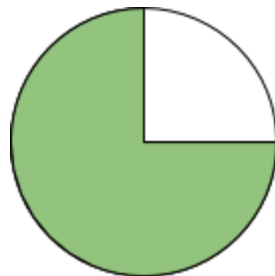
11.4. Find the area of the braai space, triangle BEC. (2)

11.5. Find the diameter of the pool. (1) (9)

12.

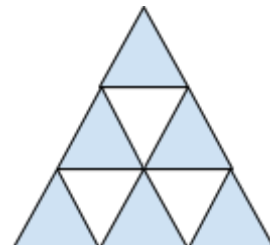
12.1. $\frac{1}{6}$ is half of x . What is the value of x ? (1)

12.2. What fraction of the circle is shaded?



(1)

12.3. What fraction of the triangle is shaded?



(1)

12.4. Three-fifths of a number is 42. What is the number? (2) (5)

13. Calculate:

13.1. $\frac{5}{6} \times 2$ (2)

13.2. $3\frac{1}{4} \times 2\frac{2}{3}$ (3)

13.3. $2\frac{1}{9} - \frac{1}{3}$ (2)

13.4. $\frac{7}{8} - \frac{3}{10}$ (3) (10)

14. Sam was given a bag of sweets.

He ate 20% of them and when he counted he had 32 sweets left.

How many sweets did he eat? (2)

15. Multiply 29. 438788 by 1000 and round off to 2 decimal places. (2)

16. Look at the following pattern:

$$\frac{9}{200} = 0.045$$

$$\frac{11}{200} = 0.055$$

$$\frac{13}{200} = 0.065$$

Using this, or otherwise, write down the decimal equivalent of:

16.1. $\frac{7}{200}$ (1)

16.2. $\frac{12}{200}$ (1) (2)

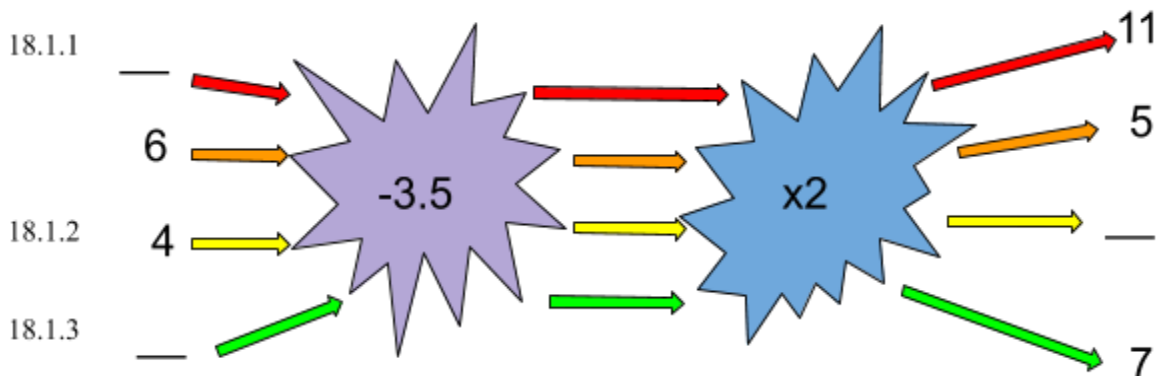
17. Jack buys two milk cartons for R9.95 each. He buys one loaf of bread at R13.50 and one box of eggs at R8.90.

17.1. How much will all of Jack's groceries cost? (3)

17.2. If he has a R50 note, how much change will he have to buy sweets? Or will he have to put something back? Show all your working out. (1) (4)

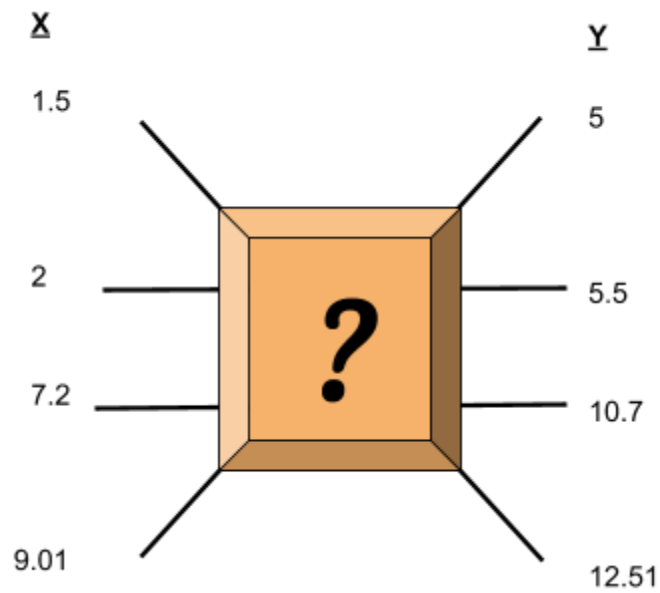
18.

18.1. Fill in the missing spaces in the flow diagram.



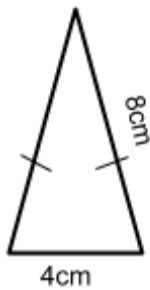
(3)

18.2. Write down in words the rule that changes x to y .



(2) (5)

19. Look at the triangle below.



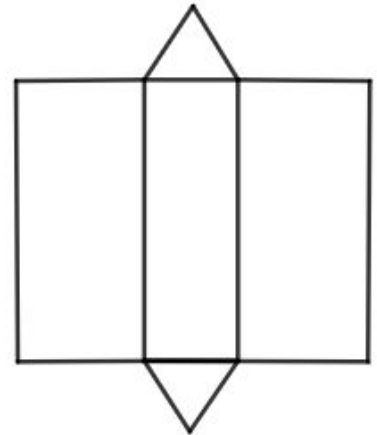
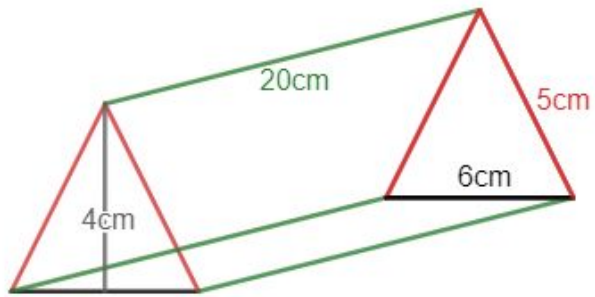
A square has the same perimeter as the triangle. How long is one side of the square? (3)

20. The length and width of a rectangle are doubled. This means that...

20.1. ...the **perimeter** stays the same / doubles / increases but we cannot say exactly how much.

20.2. ...the **area** stays the same / doubles / triples / becomes 4 times bigger. (2)

21. The box for a fancy chocolate is shown below. On the right is the net if you unfold it.



If you wanted to copy the box, you would need to know how much cardboard to buy.
Calculate the surface area of the box.

(4)

TOTAL: [100]