

KULLEĠĠ SAN BENEDITTU Secondary School, Kirkop

Mark

HALF YEARLY EXAMINATION – 2017/2018

Track 2

Year 10

MATHEMATICS
Non Calculator Paper

TIME: 20 mins

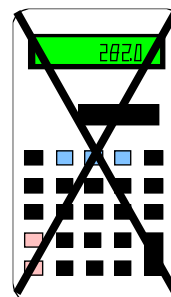
NAME: _____

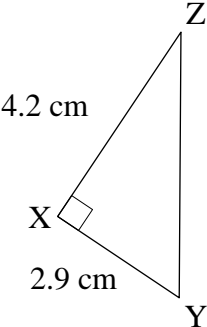
CLASS: _____

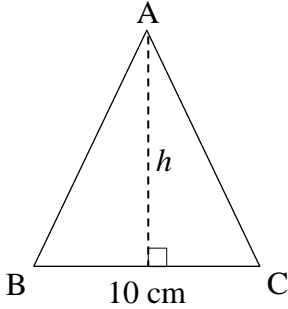
Mark

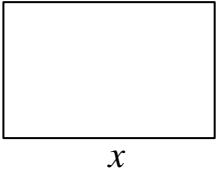
Instructions to Candidates

- **Answer all questions.**
- **This paper carries a total of 20 marks.**
- **Calculators and protractors are NOT ALLOWED.**

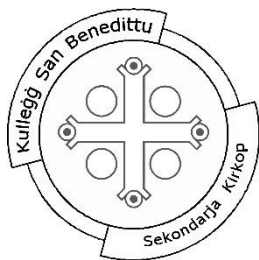


| No. | Question | Space for working, if required |
|-----|--|--------------------------------|
| 1 | Write 0.00846 in standard form. Ans: _____ | |
| 2 | Which fraction is the larger? $\frac{2}{3}$ or $\frac{4}{5}$ Ans: _____ | |
| 3 | The n^{th} term of a linear sequence is $3 - 2n$. Find the 5 th term of the sequence. Ans: _____ | |
| 4 |  <p>Triangle XYZ is a right-angled triangle. Side ZY is roughly equal to:</p> <p>(A) 5 cm (B) 7 cm (C) 10 cm</p> <p>Ans: _____</p> | |
| 5 | Which one of the following is NOT equal to $\frac{1}{5}$? (A) 0.2 (B) 0.5 (C) 20% (D) 5^{-1} Ans: _____ | |
| 6 | Simplify the algebraic expression: $2(3 + 2a) - 4(2 + a)$ Ans: _____ | |
| 7 | If $a = bc - d$, find the value of a given that $b = 5$, $c = 7$ and $d = -2$. Ans: _____ | |

| | | |
|----|---|--|
| 8 | <p>Fill in the missing factors of 60:</p> <p>1, _____, 3, _____, _____, 6, _____, _____, 15, _____, _____, 60</p> | |
| 9 | <p>$\frac{1}{2}$ kg of meat costs €2.50. What is the cost of $2\frac{1}{2}$ kg of this meat?</p> <p>Ans: _____</p> | |
| 10 | <p>Work out the mean of: 96, 98, 100, 102, 109.</p> <p>Ans: _____</p> | |
| 11 | <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>If the area of triangle ABC is 20 cm^2, find its height h.</p> <p>Ans: _____</p> </div> </div> | |
| 12 | <p>Find n if:</p> $2^7 \div 2^n = 32$ <p>Ans: _____</p> | |
| 13 | <p>Work out:</p> $10 \div 3\frac{1}{3}$ <p>Ans: _____</p> | |
| 14 | <p>A cube is of side 10cm. Its total surface area is:</p> <p>(A) 100 cm^2 (B) 300 cm^2 (C) 600 cm^2</p> <p>Ans: _____</p> | |

| | | |
|----|---|--|
| 15 | Find the perimeter of the shape drawn as a result of the following set of commands: PD REPEAT 4 [FD 80 RT 90] Ans: _____ | |
| 16 |  <p>The area of this rectangle is 28 cm^2. What values can x and y take?</p> <p>$x = \text{_____}$ $y = \text{_____}$</p> | |
| 17 | A man shared €10,000 between two of his children in the ratio 1:4. How much does each get? Ans: _____ | |
| 18 | The area of a square is 38 cm^2 . Write an estimation of the length of one of its sides. Ans: _____ | |
| 19 | Which one of the following statements is true? (A) 2 is a perfect square (B) 2 is the reciprocal of $1\frac{1}{2}$ (C) 2 is the only even prime number (D) 2 is the square of 4 Ans: _____ | |
| 20 | Given that $a + 2b = 10$, which one of the following is correct? (A) $b = 10 - a$ (B) $b = 10 - 2a$ (C) $b = \frac{10 - a}{2}$ (D) $b = \frac{10}{2} - a$ Ans: _____ | |

END OF NON-CALCULATOR PAPER



KULLEGG SAN BENEDITTU Secondary School, Kirkop

Mark

HALF YEARLY EXAMINATION – 2017/2018

Track 2

Year 10

MATHEMATICS
Main Paper

TIME: 1 hr 40 mins

| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | Total Main | Non Calc | Global Mark |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|---------------|-------------|----------------|
| Mark | | | | | | | | | | | | | | | | | |

DO NOT WRITE ABOVE THIS LINE

NAME: _____

CLASS: _____

INSTRUCTIONS TO CANDIDATES:

- Answer all questions.
- This paper carries 80 marks.
- Calculators and mathematical instruments are allowed but all necessary working must be shown.

1. Work out the value of the following, giving your answer correct to 3 significant figures:

$$\frac{\sqrt{49.3 - 20.2}}{6.79 \times 0.8}$$

Ans: _____

(2 marks)

2. Factorise: $2d^2 - 8d$

Ans: _____

_____ (2 marks)

3. Simplify:

(a) $(2p^4)^2$

(b) $6c^3 \div 2c$

Ans: _____

Ans: _____

(c) $4d + 3e - 2d + e$

(d) $3x(2x + 4)$

Ans: _____

Ans: _____

_____ (4 marks)

4. Write down the value of a :

(a) $a^{100} = 1$

(b) $2^a = \frac{1}{4}$

Ans: _____

Ans: _____

_____ (2 marks)

5. One lap of a horse track is $4\frac{2}{3}$ km long. A horse runs $25\frac{2}{3}$ km. How many laps does the horse run? Give your answer as a mixed number.

Ans: _____

_____ (2 marks)

6. (a) The scale on a map is 1cm to 5 km. What is the actual distance, in km, between two villages which are 6.5 cm away from each other on the map?

Ans: _____

- (b) A syrup is made by dissolving 2 cups of sugar in 600 ml of boiling water. How many cups of sugar should be used for 1800 ml of boiling water?

Ans: _____

- (c) Peter takes $1\frac{1}{2}$ hours to arrive home if he drives at an average speed of 66 km/hr. How long does he take to arrive home if he drives at an average speed of 60 km/hr? Give your answer in **hours** and **minutes**.

Ans: _____

(8 marks)

7. To print posters, 'Print and Go' printing company charges a €10 booking fee and €3 for each printed poster.

- (a) Write down a formula for **C**, the cost in €, to print **p**, the number of posters.

Ans: _____

- (b) Work out the cost of printing 150 posters.

Ans: _____

- (c) Make '**p**' the subject of the formula.

Ans: _____

- (d) A youth club spends €70 on posters. How many posters does it buy?

Ans: _____

(8 marks)

8. Use the information given in the table to answer the following questions:

| Planet | Diameter (km) | Mass (kg) | Distance from the centre of the sun to the centre of the planet (km) |
|---------|--------------------|-----------------------|--|
| Earth | 1.28×10^4 | 5.97×10^{24} | 1.50×10^8 |
| Mars | 6.79×10^4 | 6.42×10^{23} | 2.28×10^8 |
| Saturn | 1.21×10^5 | 5.68×10^{26} | 1.43×10^9 |
| Neptune | 4.95×10^4 | 1.02×10^{26} | 4.50×10^9 |

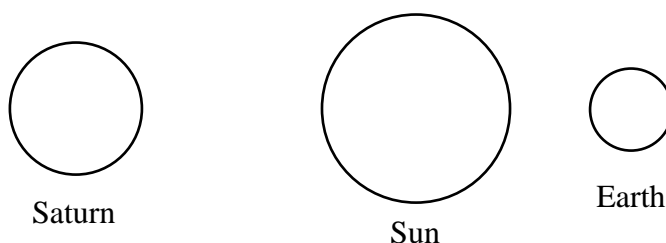
(a) Which planet has the **largest** mass?

Ans: _____

(b) Which planet is about **6 times** as far away from the Sun as Mars?

Ans: _____

(c) At a particular moment, the Earth, the Sun and Saturn are aligned as in the diagram below. Work out the **distance** between **Saturn and Earth** at this moment, giving your answer in **standard form**.



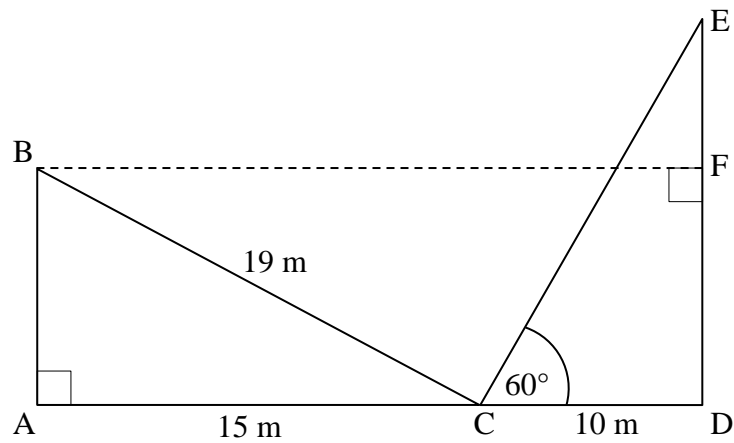
Ans: _____

(d) Work out the **circumference** of the Earth.
Give your answer to the nearest **whole number**.

Ans: _____

(8 marks)

9. In this figure, $AC = 15\text{ m}$, $CD = 10\text{ m}$ and $BC = 19\text{ m}$. Also, $\angle ECD = 60^\circ$.



Work out, giving your answer to the **nearest metre**:

- (a) the length of AB

Ans: _____

- (b) the length DE

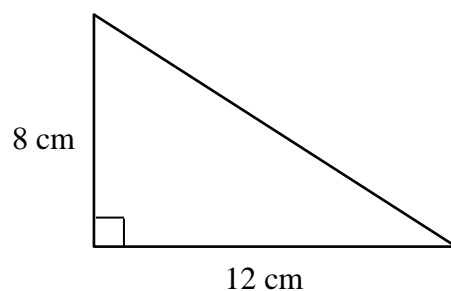
Ans: _____

- (c) the length EF

Ans: _____

_____ (7 marks)

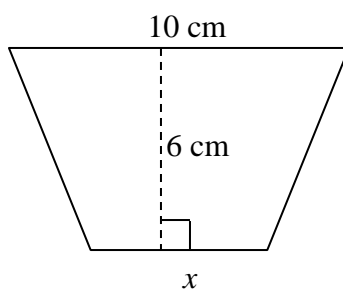
10.



- (a) Work out the area of the triangle.

Ans: _____ cm^2

The area of the above triangle is **equal** to the area of the following trapezium.

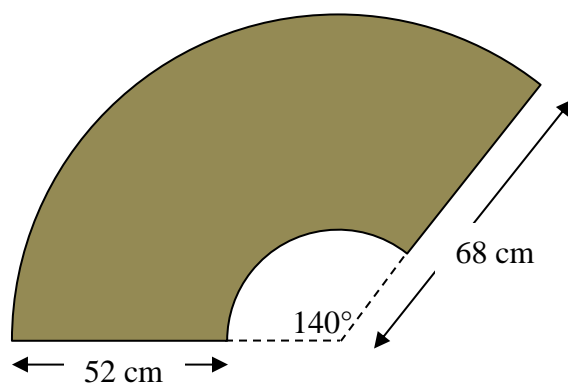


- (b) Hence work out the value of x .

Ans: $x =$ _____ cm

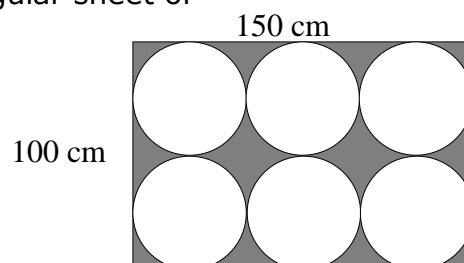
_____ (5 marks)

11. (a) A wiper on a windscreen cleans the shaded area as shown in the diagram.
Calculate the area of the windscreen cleaned by the wiper to the **nearest cm^2** .



Ans: _____

- (b) Six identical circles are cut from a rectangular sheet of metal measuring 100 cm by 150 cm.



- (i) Calculate the **radius** of **one** of the circles.

Ans: _____

- (ii) Work out the **area** of one of the circles.
Give your answer correct to **2 decimal places**.

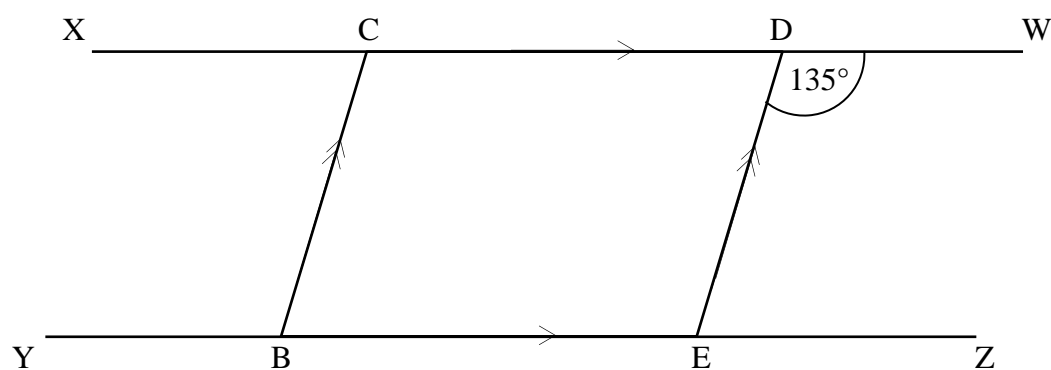
Ans: _____

- (iii) Calculate the **area** of wasted metal.

Ans: _____

(12 marks)

12. BCDE is a parallelogram. XW and YZ are straight lines.



- (a) Calculate the size of $\angle BED$, giving reasons for your answer.

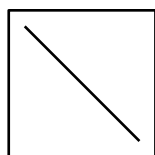
Ans: _____

Reason: _____

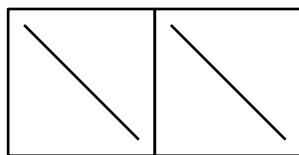
- (b) Show that $\angle XCB = \angle DEZ$.

_____ (3 marks)

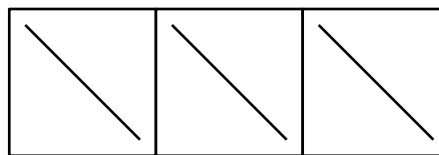
13. These patterns are made using sticks.



Pattern 1



Pattern 2



Pattern 3

(a) Draw pattern 4.

(b) Show that the first five patterns use a total of 65 sticks.

(c) Work out the n^{th} term of the sequence.

Ans: _____

(d) How many sticks does pattern 50 have?

Ans: _____

(e) Can one of the patterns have 39 sticks? Explain.

Ans: _____

_____ (7 marks)

14. (a) A number of persons took part in a lottery. The table shows the number of tickets bought by each person.

| | | | | | |
|--------------------------|----|---|---|---|---|
| Number of tickets | 1 | 2 | 3 | 4 | 5 |
| Frequency | 10 | 6 | 7 | 2 | 1 |

- (i) How many persons took part in the lottery?

Ans: _____

- (ii) How many tickets were sold?

Ans: _____

- (iii) Work out the **mean** number of tickets bought by each person.

Ans: _____

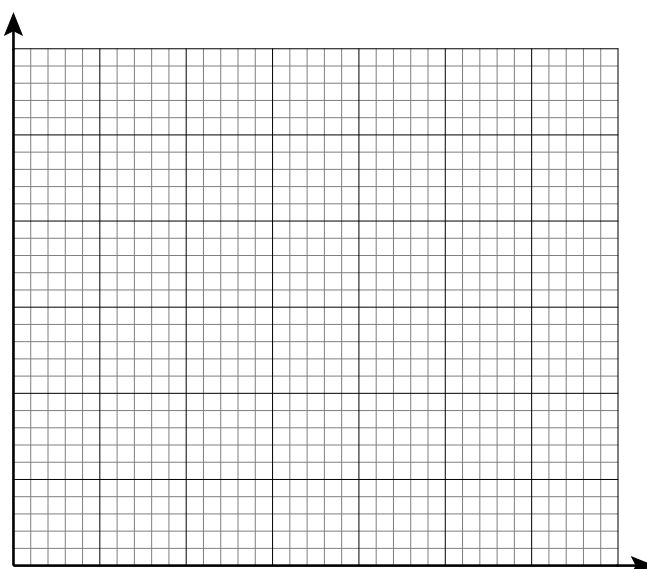
- (b) The table below shows the marks obtained by 150 students in a French test.

| | | | | | | |
|------------------|-------|---------|---------|---------|---------|---------|
| Mark | 0 - 9 | 10 - 19 | 20 - 29 | 30 - 39 | 40 - 49 | 50 - 59 |
| Frequency | 10 | x | 20 | 20 | 40 | y |

- (i) Given that $x : y = 1 : 5$, find x and y .

$x =$ _____ $y =$ _____

- (ii) Draw a histogram to illustrate the data in the table.



(10 marks)

END OF MAIN PAPER