DEPARTMENT FOR CURRICULUM,
LIFELONG LEARNING AND EMPLOYABILITY
Directorate for Learning and Assessment Programmes
Educational Assessment Unit

Track 1

Annual Examinations for Secondary Schools 2020

YEAR 11 **MATHEMATICS** **TIME: 1h 40min**

Main Paper

Question	1	2	3	4	5	6	7	8	9	10	11	12	Total Main	Non Calc	**Global Mark**
Mark															

DO NOT WRITE ABOVE THIS LINE.

Name: _____ Class: _____

CALCULATORS ARE ALLOWED BUT ALL NECESSARY WORKING MUST BE SHOWN.
ANSWER ALL QUESTIONS.

1. (a) Factorise:

(i) $3x + 15$ (ii) $8x^2 - 4x$

Ans: _____ Ans: _____

(b) Expand and simplify: $5(x - 2) - 4(x - 3)$

Ans: _____

(c) Solve the equation: $8x - 5 = 3x + 7$

Ans: x = _____

(7 marks)

2. Use your calculator to work out the following correct to 2 places of decimal:

(a) $\sqrt{415}$

Ans: _____

(b) $(2.85)^3 + 1.29 =$

Ans: _____

(c) $\dfrac{2.5 \times (7.36 + 4.85)}{(8.61 - 3.49)} =$

Ans: _____

(6 marks)

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3. (a) Work out 35% of €750.

Ans: € _____

(b) Mike earns €2300 per month. Each month he spends €80 on car fuel. Express the amount Mike pays on car fuel as a percentage of his monthly income. **Give your answer correct to one decimal place.**

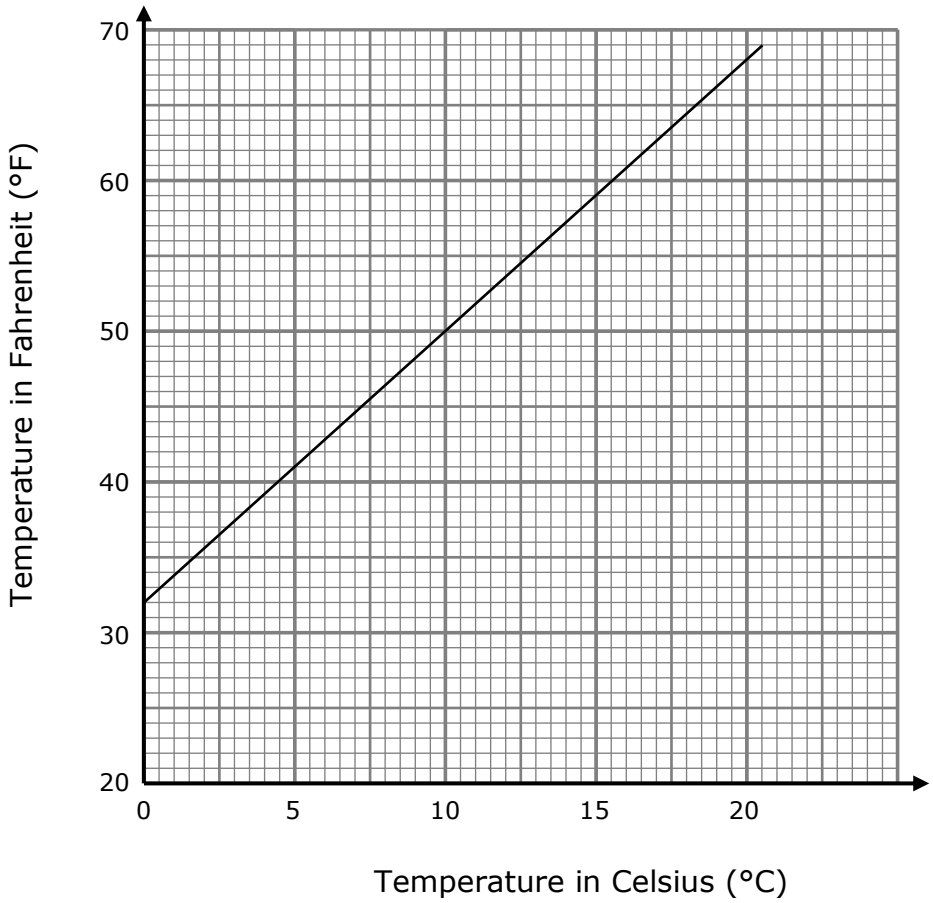
Ans: _____%

(c) Paula earned a gross pay of €18 400 in 2019.
In 2020, she received a 5% increase in her gross pay.
Calculate Paula's gross pay in 2020.

Ans: € _____

(7 marks)

4.



Use the conversion graph above to answer the following.

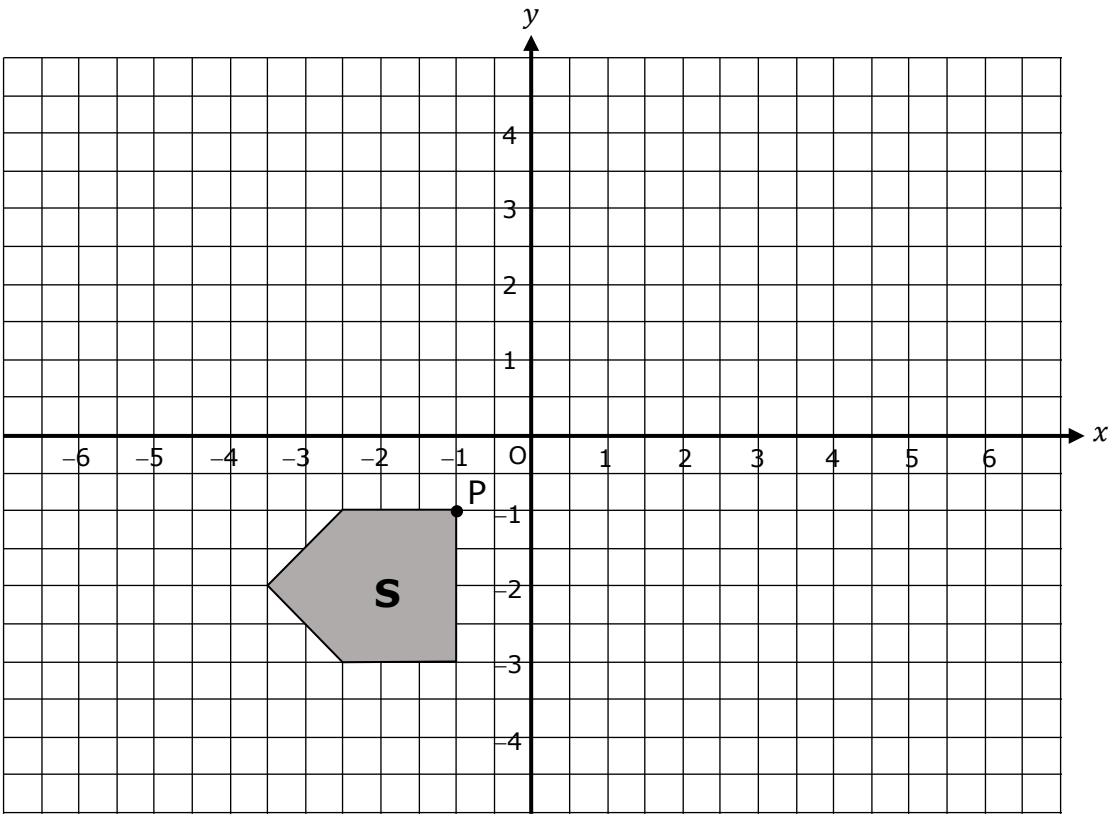
(a) Convert 15°C to Fahrenheit. Ans: _____°F

(b) Convert 43°F to Celsius. Ans: _____°C

(c) What is 0°C in Fahrenheit? Ans: _____°F

(3 marks)

5.



Draw the following transformations on the grid above.

(a) Reflect shape **S** in the x–axis. Label the image **A**.

(b) Translate shape **S** by 6 right and 4 up. Label the image **B**.

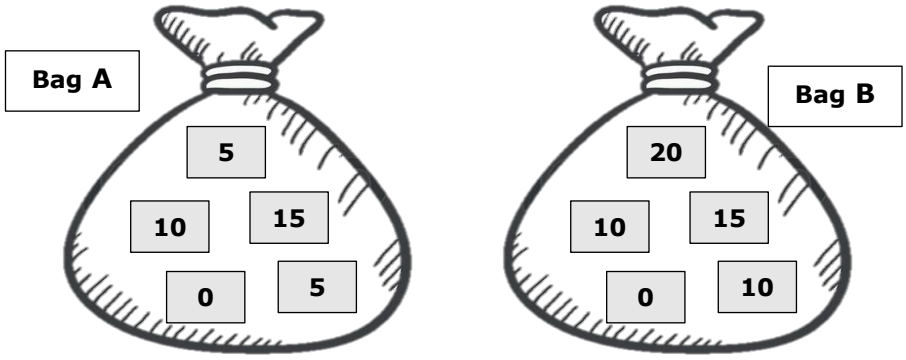
(c) Rotate shape **S** 90° anticlockwise, centre the origin. Label the image **C**.

(d) Enlarge shape **S** using centre P and scale factor 2. Label the image **D**.

(e) Fill in: Shape _____ and shape _____ are congruent.

(9 marks)

6. Two bags, A and B, each contain five cards showing numbers as given below.



A player picks a card at random from each bag and adds the two numbers to obtain the total score.

(a) Complete the possibility space for the total score.

		Bag B				
		0	**10**	**10**	**15**	**20**
Bag A	**0**	0	10		15	
	5	5	15	15	20	
	5	5	15	15		
	10	10	20	20		
	15	15	25		30	

(b) Work out the probability of getting a score of 20.
Give your answer in its simplest form.

Ans: _____

(c) Work out the probability of getting a score less than 15.

Ans: _____

(5 marks)

7. (a) Write down the rule for the following sequence:

36, 32, 28, 24, 20, …

Rule: Start with _____ and _____

(b) The following pattern is made with sticks.

Pattern 1 Pattern 2 Pattern 3

(i) Complete the table below:

Pattern	1	2	3	4	5
Number of sticks	5	9			

(ii) Which pattern can be made up of 33 sticks?

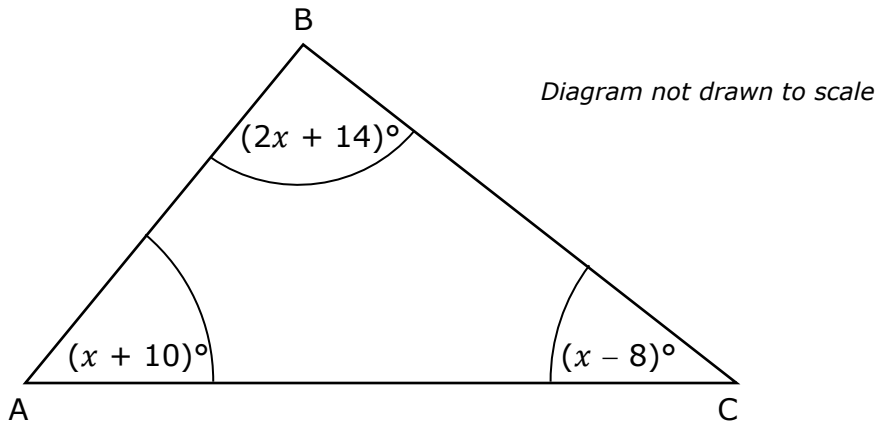
Ans: Pattern _____

(iii) How many sticks are needed to make Pattern 10?

Ans: _____

(7 marks)

8. The angles of a triangle are $(x + 10)°$, $(2x + 14)°$ and $(x - 8)°$.



(a) Write an expression, in terms of x, for the sum of the angles.
Give your answer in its simplest form.

(b) The sum of the angles in a triangle is 180°.

(i) Use your answer in part (a) to write an equation in x and solve it.

Ans: x = _____ °

(ii) Use your answer in part (b)(i) to work out the size of angle $A\hat{B}C$.

Ans: _____ °

(7 marks)

9. Use ruler and compasses only in this question.

(a) Construct triangle PQR such that PQ = 12 cm, PR = 6 cm and $R\hat{P}Q = 60°$.

Point P has been done for you.

+
P

(b) Measure angle $P\hat{R}Q$. Ans: $P\hat{R}Q$ = _____ °

(c) Measure the length of RQ. Ans: RQ = _____ cm

(6 marks)

10. The diagram shows a prism of length 21 cm. The cross-section of the prism is a right-angled triangle.

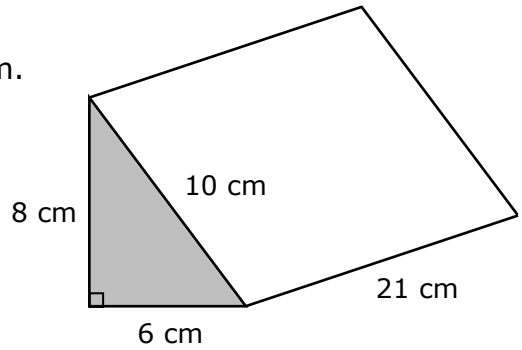


Diagram not drawn to scale

(a) Work out the cross-sectional area of the prism.

Ans: _____cm^2

(b) The diagram below represents the net of the prism. Fill in the missing lengths.

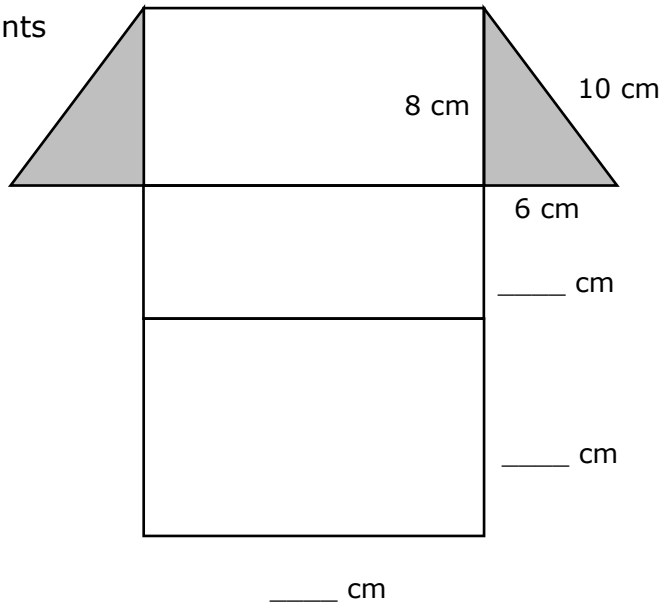


Diagram not drawn to scale

(c) Use the diagram in part (b) to work out the total surface area of the prism.

Ans: _____cm^2

(8 marks)

11. The diagram below shows a free standing stage that will be placed in the middle of a concert area.

The stage consists of a rectangular space and two three-quarter circles. The rectangular space is 20 m long and 10 m wide. The circular spaces have a radius of 4 m.

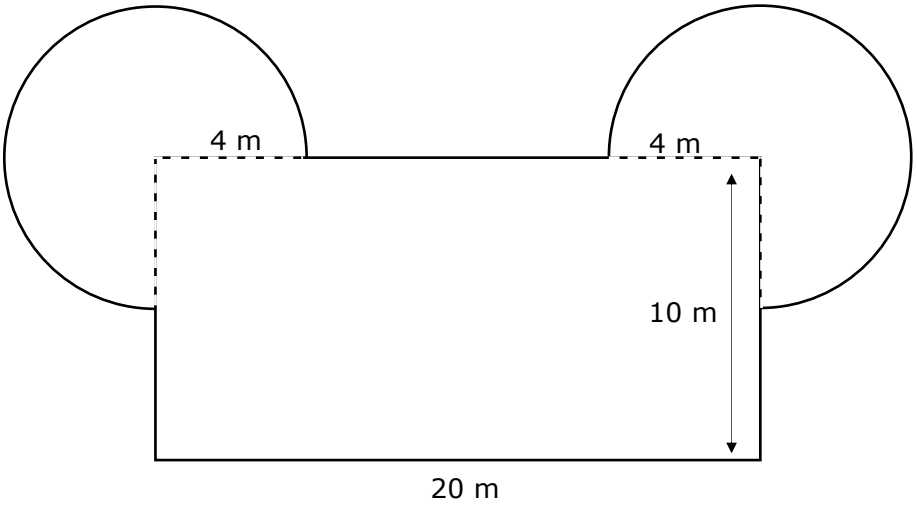


Diagram not drawn to scale

(a) Calculate the total area of the stage.

Ans: _____m^2

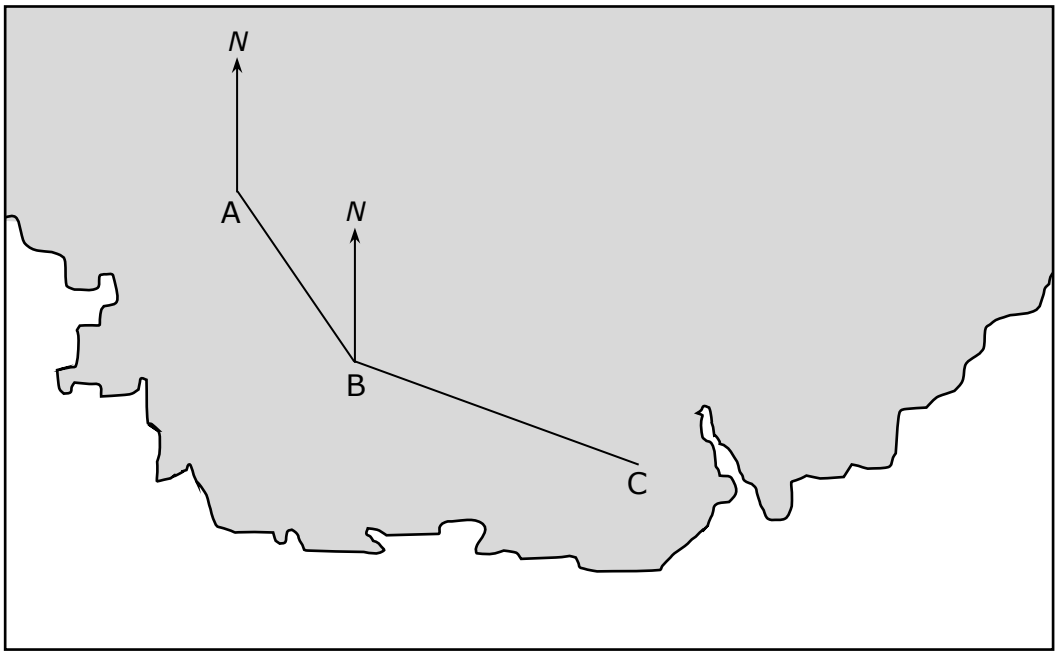
A light strip will be placed along the whole edge of the stage.

(b) Calculate the length of light strip needed.

Ans: _____m

(8 marks)

12. The map below shows points A, B and C.



(a) Measure the bearing of B from A.

Ans: _____°

(b) (i) Measure the distance, in cm, from A to B.

Ans: _____cm

(ii) Using the scale 1 : 500 000, calculate the real distance from A to B. Give your answer in kilometre.

Ans: _____km

Kim cycles 12.5 km on the straight road from B towards C and then stopped for a rest.

(c) On the map above, mark with a ✕, the exact position where Kim stopped.

(7 marks)

End of Paper

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