B

JUNIOR LYCEUM AND SECONDARY SCHOOL
ANNUAL EXAMINATIONS 2007
Educational Assessment Unit – Education Division

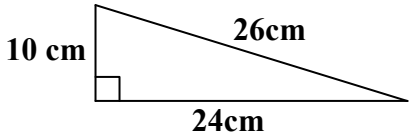
FORM 4 **MATHEMATICS – Scheme B** **TIME: 20 minutes**
(Non-Calculator Paper)

Name _____ **Class**_____

Mark

Instructions to Candidates

- Answer all questions. There are 20 questions to answer.
- Each question carries 1 mark.
- Calculators, protractors and other mathematical instruments except rulers are not allowed.
- You are not required to show your working. However space for working is provided if you need it.

No.	QUESTION	Space for Working if Required
1	**Work out: (8 – 3) × (3 + 7).** **Ans:**_____	
2	**Choose the best estimate for 1923·7 + 895·6 + 3106·2 – 916·6 from the following: (a) 3000 (b) 5000 (c) 7000.** **Ans:**_____	
3	**Work out and simplify** $\frac{2}{3} \times \frac{9}{10}$ **.** **Ans:**_____	
4	**Write the number 237000 in Standard form.** **Ans:**_____	
5	**In a recipe 80ml of milk is needed to make 4 buns. How much milk is needed to make 10 buns?** **Ans:**_____	
6	**A map ratio is given as 1:1000. What actual length is given by 2·5 cm on the map?** **Ans:**_____	
7	**Make *x* the subject of the formula: $y = 6x - 5$.** **Ans:**_____	
8	**The area of this right-angled triangle is:** **(a) 60 cm^2 , (b) 240 cm^2 , (c) 34 cm^2 or (d) 120 cm^2.**  **Ans:**_____	

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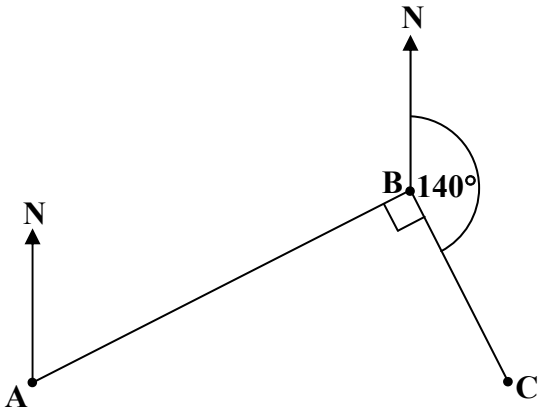
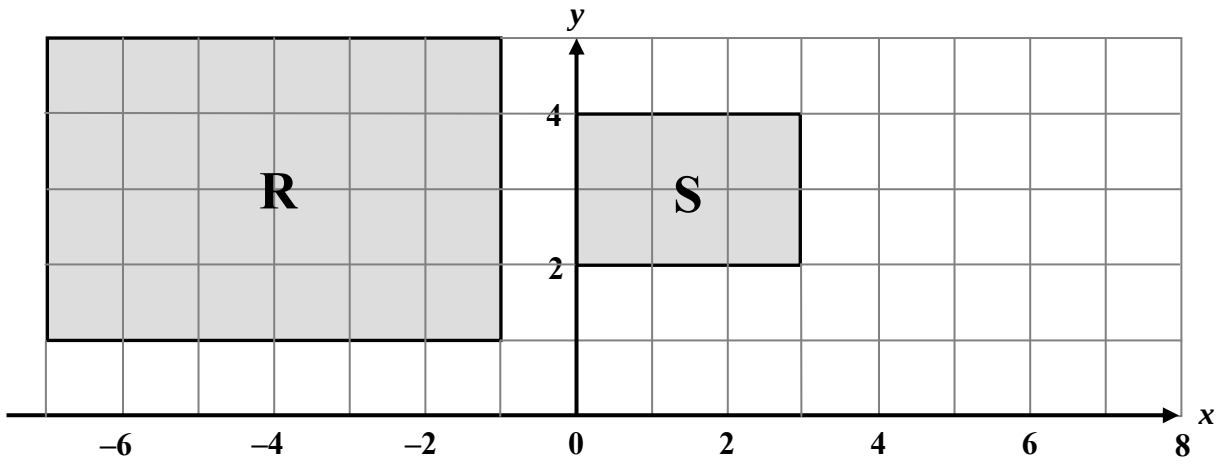
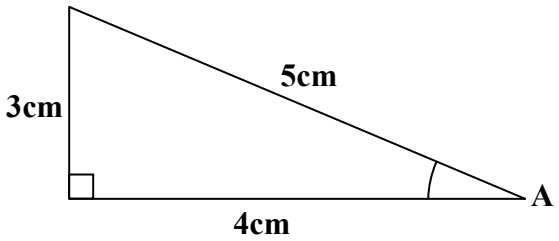
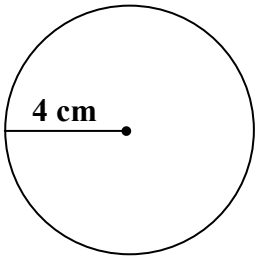
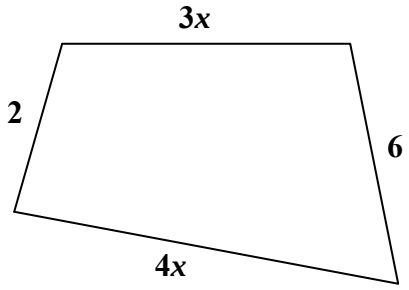
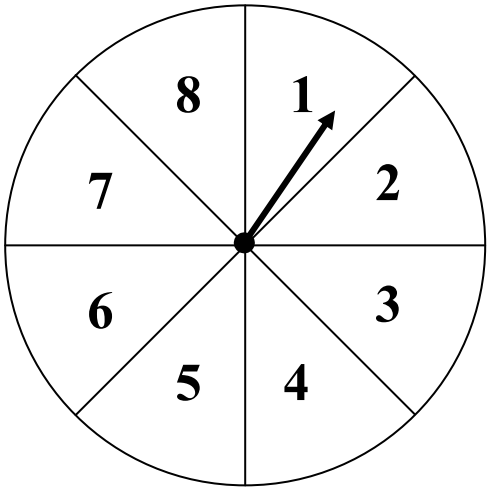
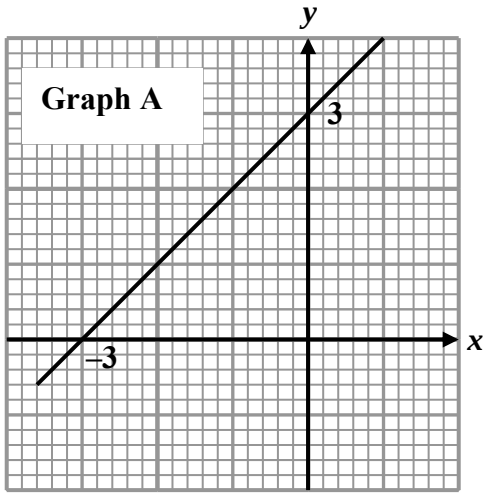
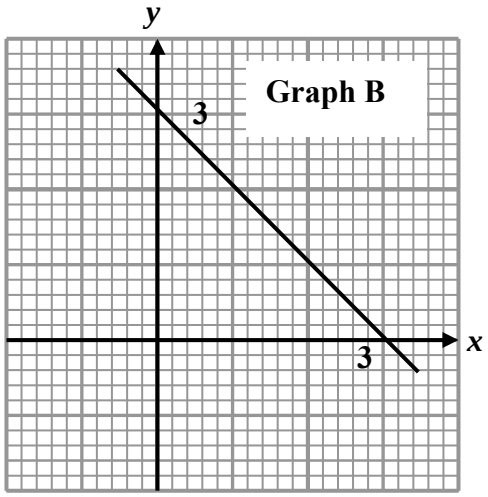
9	**Express 0·05m in mm.** **Ans:**_____	
10	**Write down the three-figure bearing of A from B.**  **Ans:**_____	
11	**Calculate the sum of the interior angles of a pentagon.** **Ans:**_____	
12	**Shape R is an enlargement of shape S. Mark with a ✕ the centre of enlargement on the diagram.**  	

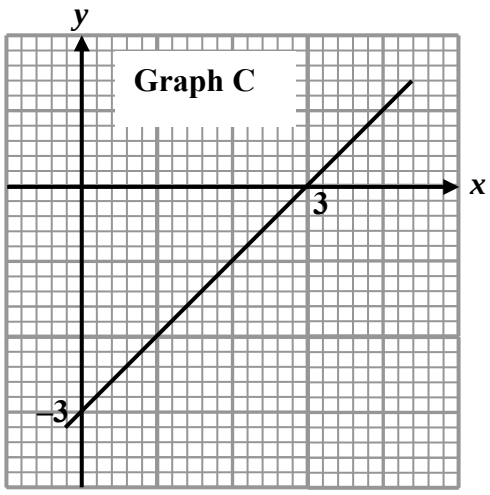
13	 **Complete:** **Sin A =** ———	
14	**Take π = 3 to estimate the area of a circle of radius 4cm.**  **Ans:**_____	
15	**Sketch the shape traced by this Logo program:** **Pd Repeat 3[fd 50 rt 45] home** 	

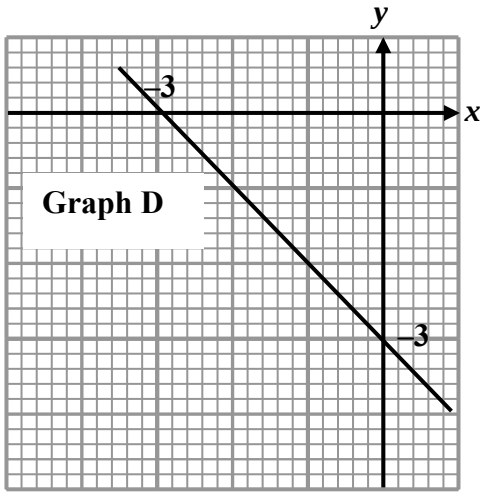
16	**Write a simplified expression for the perimeter of this quadrilateral.**  **Ans:**_____	
17	**Find the median of this set of numbers:** **50 , 70 , 62 , 58 , 52 .** **Ans:**_____	
18	**Calculate the mean of this set of numbers:** **1 , 2 , 3 , 3 , 3 , 4 , 4 , 1 2 .** **Ans:**_____	
19	 **This spinner is spun once. What is the probability that it lands on a number less than 6?** **Ans:**_____	

20 **Which of the following is the graph of $y = x + 3$?**









Ans:_____

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FORM 4 **MATHEMATICS – Scheme B (Main Paper)** **TIME: 1h 40min**

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

DO NOT WRITE ABOVE THIS LINE

Name: _____ **Class:** _____

Calculators and mathematical instruments are allowed but all necessary working must be shown

ANSWER ALL QUESTIONS

1. Use your calculator to evaluate the following. Give your answers according to the accuracy indicated in brackets.

(a) $\dfrac{378 \times 162}{123 - 103} =$ _____ **(*correct to the nearest thousand*)**

(b) $\sqrt[3]{200} =$ _____ **(*correct to 2 decimal places*)**

(c) $\dfrac{3}{8000} =$ _____ **(*exact value in standard form*)**

(6 marks)

2. (a) Fill in with the correct numbers.

(i) $\dfrac{3^4 \times 3^5}{3^2} = 3^{\square}$ (ii) $(y^2)^3 = y^{\square}$

(b) Write in fractional form.

$$4^{-2} = \frac{\square}{\square}$$

(c) Evaluate 17^0 = $\square$

(5 marks)

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3. (a) Solve the equation $2x + 3 = 15 - x$.

Ans: x = _____

(b) Expand $2(4x - 1)$.

Ans: ___ _____

(c) Factorise $6ab + 4a$.

Ans: ___ _____

(d) $P = y^2 + 2z$
Find the value of P when $y = 3$ and $z = -4$.

Ans: P = _____

(9 marks)

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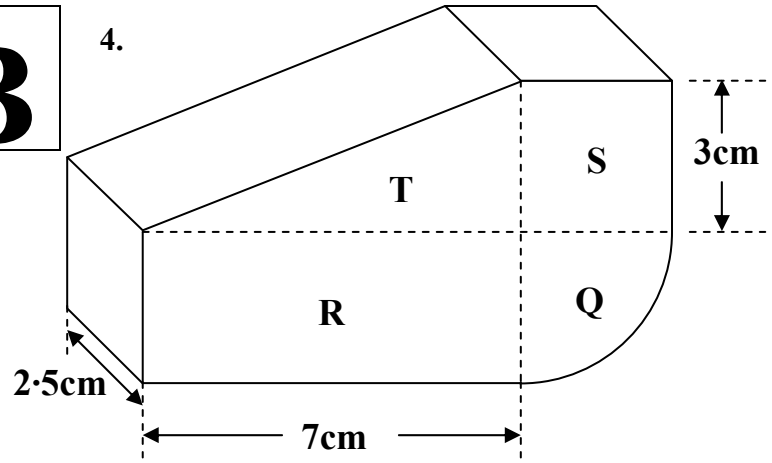
4.



This diagram shows a prism, which is 2·5cm thick.

(a) Calculate the area of :

(i) The Square S

Ans: _____cm^2

(ii) The Triangle T

Ans: _____cm^2

(iii) The Rectangle R

Ans: _____cm^2

(iv) The Quarter Circle Q. (*Correct to 1 decimal place*)

Ans: _____cm^2

(v) The uniform cross-section formed by S, T, R and Q. (*Correct to 1 decimal place*)

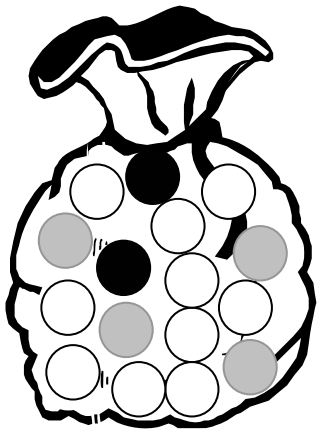
Ans: _____cm^2

(b) Calculate the Volume of the prism. (*Correct to the nearest cm^3*)

Ans: _____cm^3

(12 marks)

5. A bag contains 16 balls. 10 are white, 4 are grey and 2 are black. One ball is drawn at random. Calculate the probability that the ball is:



(a) White = _____

(b) Black = _____

(c) Grey = _____

(d) White or Grey = _____

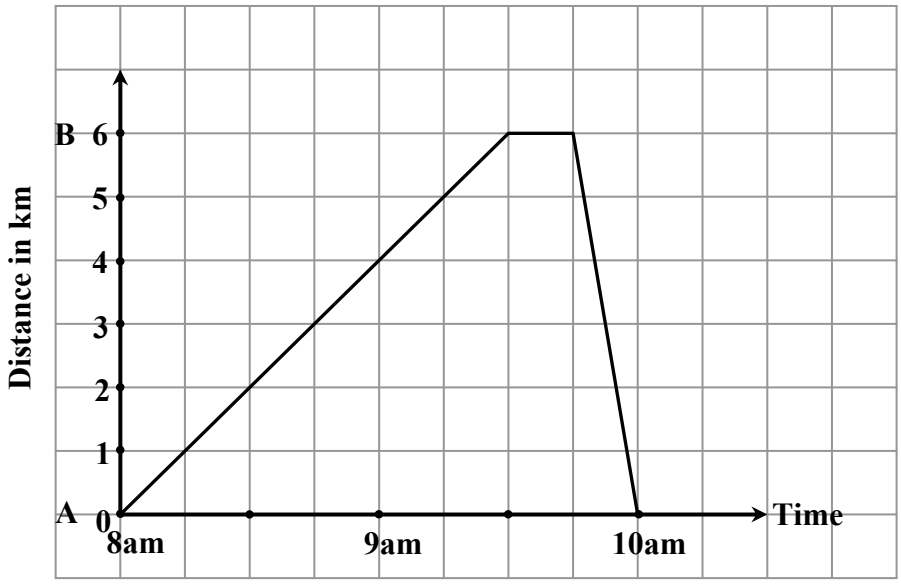
(e) Blue = _____

(f) Not White = _____

(g) Not Red = _____

(7 marks)

6.



This travel graph shows the journey made by a cyclist from A to B and back. Use the graph to answer the following:

(a) Find the speed from A to B.

Ans:_____

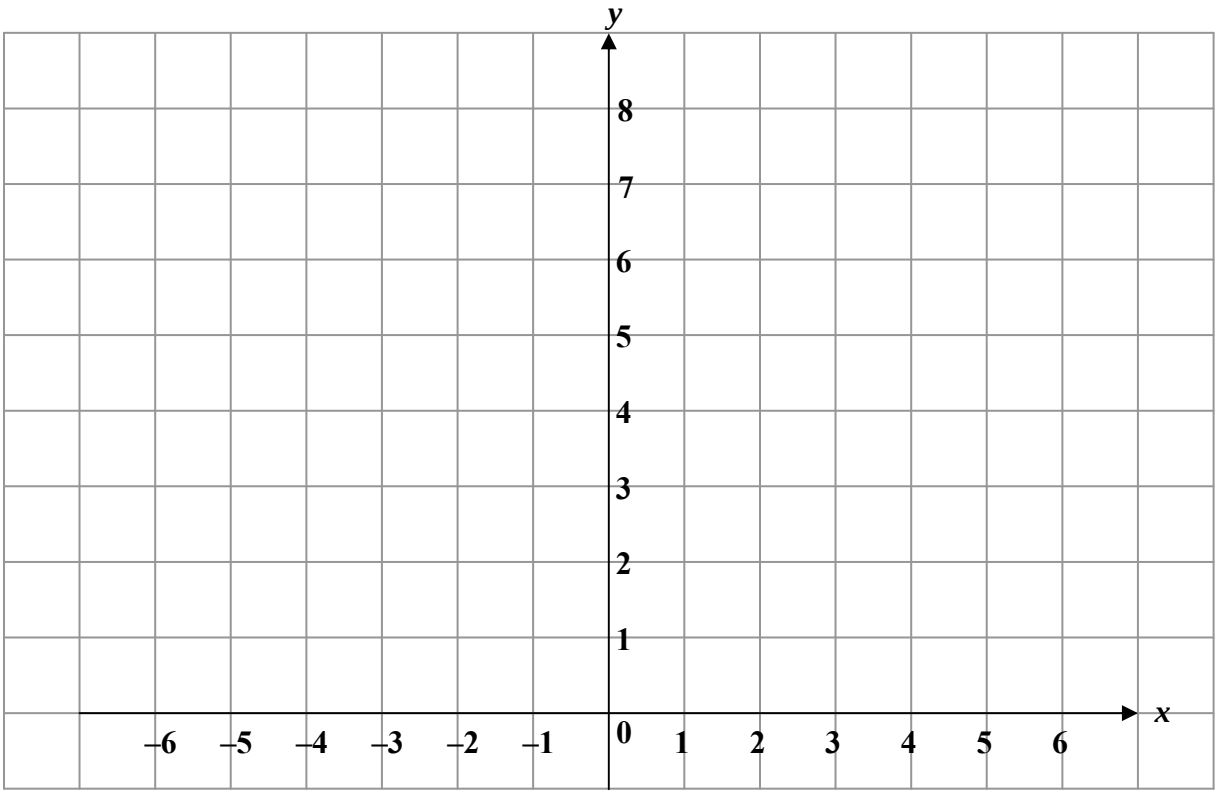
(b) Calculate the cyclist's speed from B to A.

Ans:_____

(c) How long did the cyclist rest at B before going back to A? Ans:_____

(5 marks)

7.



(a) Plot and label the points A(2,1); B(6,1); C(4,2) and D(6,8). Join AB and CD to form two straight lines.

(b) Reflect AB in the *y*-axis and label with A' and B' the vertices of the image that correspond to A and B.

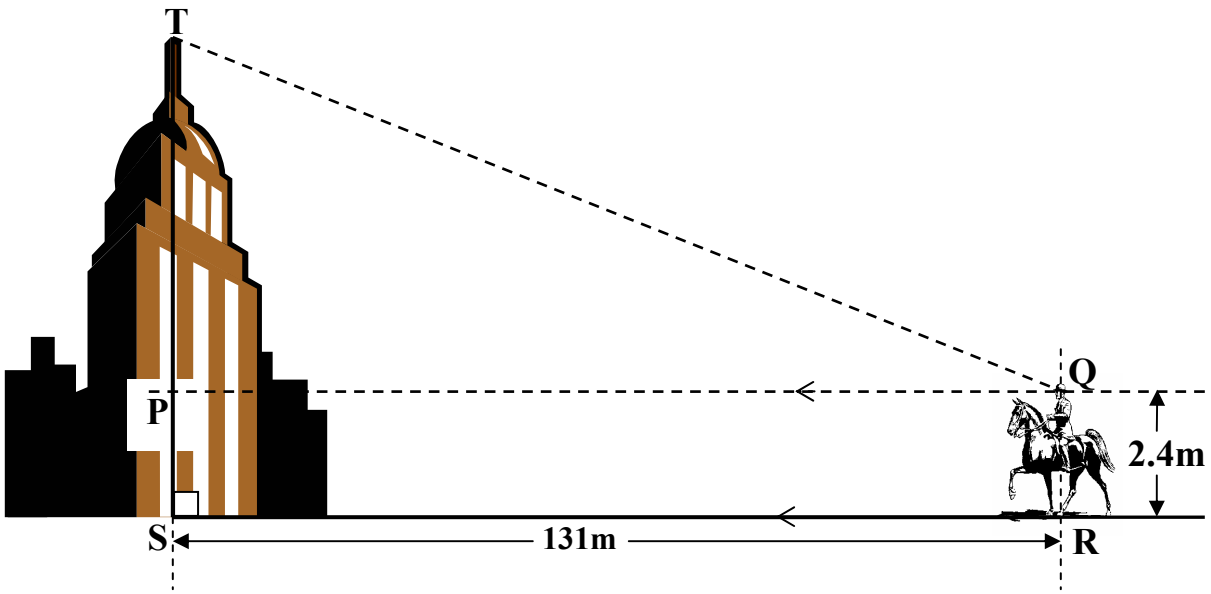
(c) Translate CD using the translation vector $\begin{pmatrix} -10 \\ -1 \end{pmatrix}$ **and label with C' and D' the vertices of the image that correspond to C and D. Join A' D' and B' D'.**

(d) What can you say about points B' and C'? _____.

(e) What type of triangle is A' B' D'? _____.

(8 marks)

8.



A horse rider QR is 2·4m above level ground and is 131m away from the foot S of a building. He observes that the angle of elevation of the top of the building T is 22°.

(a) Mark the angle of elevation of T from Q on the diagram.

(b) Calculate the length TP correct to 1 decimal place.

Ans:_____m

(c) Calculate the height of the building TS correct to 2 significant figures.

Ans:_____m

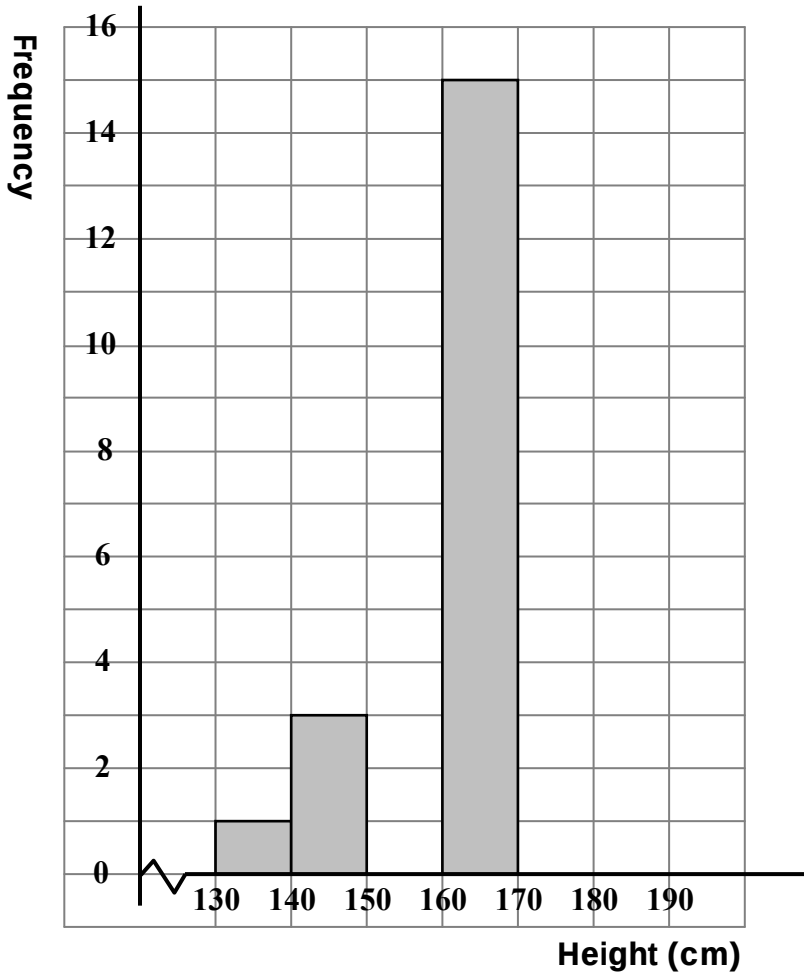
(5 marks)

9. This information about the heights (correct to the nearest cm) of 40 students has been collected.

156	162	164	162	173	155	149	182	158	166
172	174	166	148	180	158	172	164	168	158
157	158	181	147	154	164	164	163	168	171
153	134	158	159	162	164	163	167	176	178

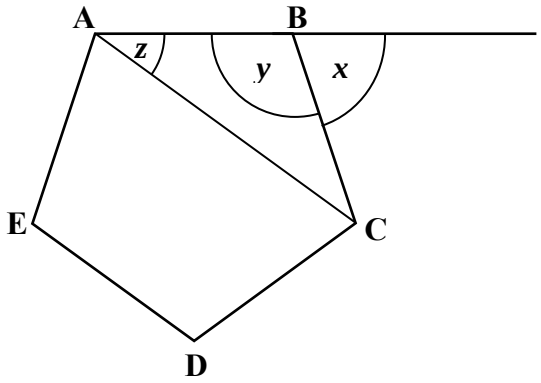
Complete the following frequency table and histogram.

Height	130<h≤140	140<h≤150	150<h≤160	160<h≤170	170<h≤180	180<h≤190
Tally	I				𝍸 III	
Frequency	1				8	



(7 marks)

10.



ABCDE is a regular pentagon.
Calculate the angles marked *x*, *y* and *z*.

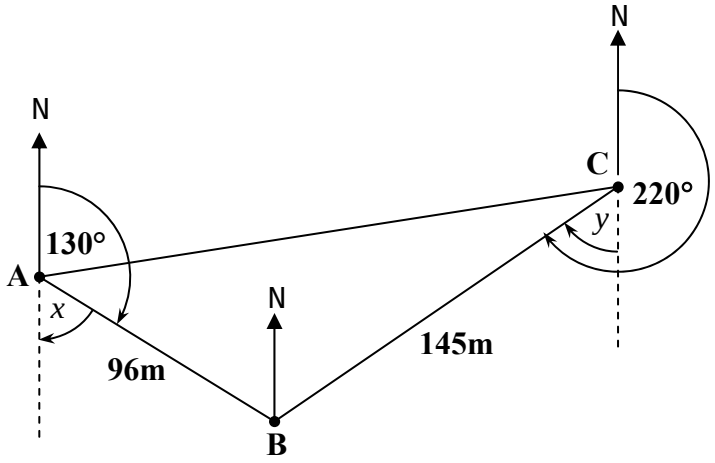
Ans: *x* = _____

_____

_____

(6 marks)

11.



B is on a bearing of 130° from A and 220° from C. AB = 96m and BC = 145m.

(a) Calculate the angle marked *x*.

Ans:_____

(b) Calculate the angle marked *y*.

Ans:_____

(c) Calculate ∠ABC.

Ans:_____

(d) Calculate the distance AC correct to the nearest metre.

Ans:_____

(10 marks)