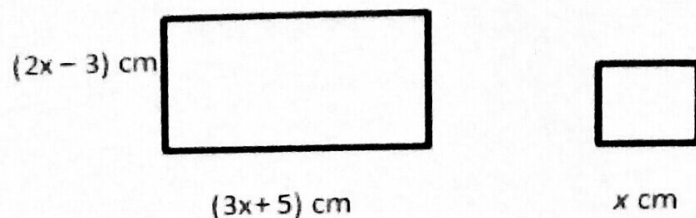


1. A square of a side x cm has the same area as a rectangle of length $(3x + 5)$ cm and width $(2x - 3)$ cm.



- (a) Form an equation in x and show that it simplifies to $5x^2 + x - 15 = 0$. [3]

- (b) Solve the equation $5x^2 + x - 15 = 0$, giving your answer correct to 2 decimal places.

Answer: $x = \dots\dots\dots$ [3]

- (c) Which figure has a greater perimeter?

Answer: $\dots\dots\dots$ [2]

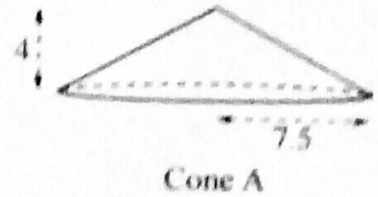
- (d) State the difference in perimeter.

Answer: $\dots\dots\dots$ [2]

2. [The curved surface area of a cone is $\pi r l$, where l is a slant height]

Cone A has radius 7.5 cm and height 4 cm.

(a) Calculate the curved surface area of cone A



Answer: cm^2 [4]

(b) Cone B is geometrically similar to cone A.

The ratio, curved surface area of cone A : curved surface area of cone B is 64:25.

Find the height of cone B.

Answer: $h =$ cm [3]

(c) Find the ratio of the volume of cone A and cone B

Answer: [3]

3.

(a) $f = (96c^2 - d)/4$

i. Find f when $c = 8$ and $d = -4$.

Answer: $f = \dots\dots\dots$ [2]

ii. Express c in terms of d and f .

Answer: $c = \dots\dots\dots$ [2]

(b) Solve $17 - 5x \leq 2x + 3$.

Answer: $\dots\dots\dots$ [2]

(c) Factorise $9 - 25x^2$.

Answer: $\dots\dots\dots$ [1]

(d) Factorise completely $8px + 6qy - 3qx - 1$

Answer: $\dots\dots\dots$ [1]

(e) Solve $5x^2 + 6x - 13 = 0$, Give your answers correct to two decimal places.

Answer: $x = \dots\dots\dots$ [3]

4.

(a) Ali decides to buy this washing machine.

<p>Washing Machine</p> <p>\$980</p>

<p>Finance offer</p> <p>Pay a 20% deposit and 24 monthly payments of \$36 each</p>

How much more would it cost Ali if he paid for the washing machine using the finance offer instead of paying the \$980 immediately?

Answer: $\dots\dots\dots$ [4]

(b) Ali deposits \$650 into a bank paying simple interest. He leaves the money there for 5 years. At the end of the 5 years, the amount in the bank is \$763.75. Calculate the percentage rate of the bank paid per year.

Answer: $\dots\dots\dots$ % [3]

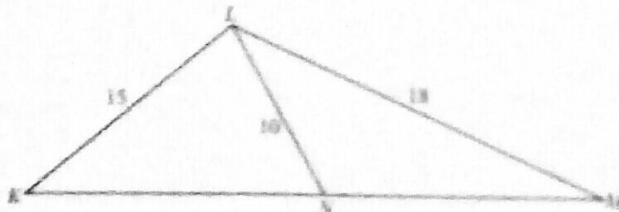
(c) Ali changed 480€ into dollars. The exchange rate was $\$1=0.6 \text{ £}$. The bank took, as commission, 2% of the amount that had been changed. Calculate the number of dollars the bank took as commission.

Answer: [3]

(d) Find the compound interest on $\$600$ for 3 years at 3.5 % per annum, compounded annually.

Answer: [2]

5.
(a)



In the diagram, triangle KLM is similar to triangle LNM. $KL=15 \text{ cm}$, $LM= 18 \text{ cm}$ and $LN = 10 \text{ cm}$.

(i) Find KM

Answer: [2]

(ii) Find KN

Answer: [3]

(iii) P is the point on LM such that PN is parallel to LK. Find,
The area of triangle NPM: The area of trapezium KLPN.
Give your answer as a fraction in its simplest form.

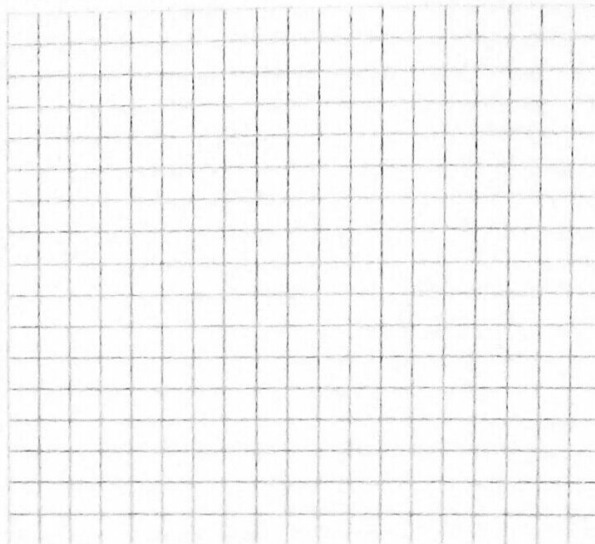
Answer: [3]

(b) Solve the following inequality and illustrate your answer with a number line

$$x + 1 < 4x - 21 \leq 3x - 13$$

Answer: x * [4]

6. A is the point (8, 7), B is the point (-2, 11) and C is the point (1, 7).



(a) Calculate the area of triangle ABC.

Answer: unit² [2]

(b) Calculate the length of AB.

Answer: unit [2]

(c) Calculate the perimeter of triangle ABC.

Answer: unit [2]

(d) Calculate angle BAC.

Answer: [2]

(e) Find the length of the perpendicular from C to AB.

Answer: unit [2]

(f) D is the midpoint of BC .Find the coordinate of D.

Answer: unit [2]

7. The ages of a sample of 40 students were recorded. The results are given in the table below.

Age (x years)	$8 < x \leq 10$	$10 < x \leq 11$	$11 < x \leq 12$	$12 < x \leq 14$	$14 < x \leq 16$	$16 < x \leq 19$
Frequency	7	8	6	10	3	6

(a) Complete the following table

[2]

Age (x years)	Frequency	Width	Frequency Densities
$8 < x \leq 10$	7	2	3.5
$10 < x \leq 11$	8	1	8
$11 < x \leq 12$	6		
$12 < x \leq 14$	10		
$14 < x \leq 16$	3		
$16 < x \leq 19$	6		

(b) In which interval does the median lie?

Answer: [1]

(c) Complete the following table

[4]

Age (x years)	Mid-point (x)	Frequency (f)	fx
$8 < x \leq 10$		7	
$10 < x \leq 11$		8	
$11 < x \leq 12$		6	
$12 < x \leq 14$		10	
$14 < x \leq 16$		3	
$16 < x \leq 19$		6	

(d) Calculate an estimate of the mean age of the students

Answer: Mean= [1]

(e) Using a scale of 1 cm to represent 1 year, draw a horizontal axis for ages from 8 to 19 years. Using a scale of 1cm to represent 1 unit, draw a vertical axis for frequency densities from 0 to 8 units.

On your axes, draw a histogram to illustrate the distribution of ages.

[3]

