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0178/01

October/November 2019

1 hour

Additional Materials: Geometrical Instruments
Tracing paper (optional)

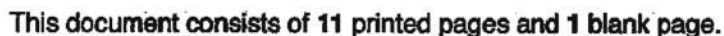
READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO NOT WRITE IN ANY BARCODES.

Answer all questions.
If working is needed for any question it must be shown below that question.

ELECTRONIC CALCULATORS MUST NOT BE USED IN THIS PAPER.

The number of marks is given in brackets [] at the end of each question or part question.
The total of the marks for this paper is 60.



1 Work out.

(a) $11 - 3 \times 2 + \frac{3}{4}$ of 24

Answer (a) [2]

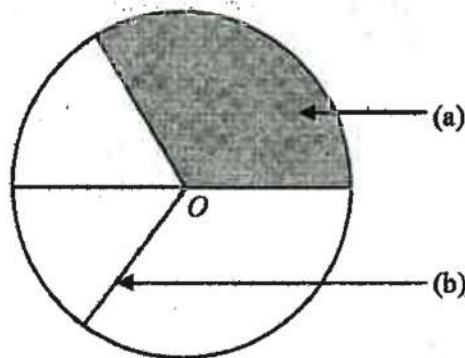
(b) $\frac{1}{1 - 3(0.5)^2}$

Answer (b) [2]

2 Express 20 cm to 1 m as ratio, in its simplest form.

Answer [2]

3 The diagram shows the parts of a circle, centre O .



Label the parts of the circle indicated.

Answer (a)

(b) [2]



4 $24 = 2 \times 2 \times 2 \times 3$.

- (a) Find the smallest integer value of t for which $\sqrt[3]{24t}$ is an integer.

Answer (a) [2]

- (b) The number 240 can be expressed as a product of a cube number, j which is greater than 1, a composite number, k and a multiple of 5, l .

Find the values of j , k and l .

Answer (b) $j =$

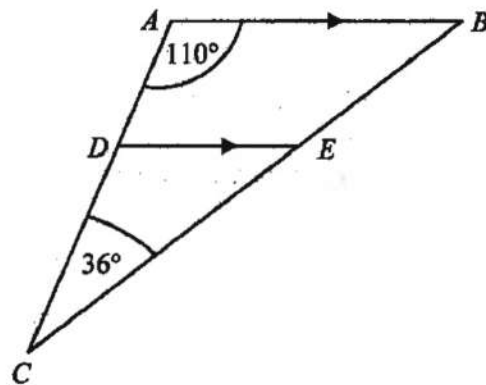
$k =$

$l =$ [3]



- 5 In the triangle ABC , AB is parallel to DE .

Angle $BAD = 110^\circ$ and angle $ACB = 36^\circ$.



NOT TO
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Find the size of the angle

- (a) ABC ,

- (b) CDE ,

- (c) DEB .

Answer (b) $^\circ$ [1]

Answer (c) $^\circ$ [2]



- 6 A shopkeeper pays M320 for 16 cartons of milk.

(a) Find the amount he pays for one carton.

Answer (a) M [1]

- (b) He sells $\frac{7}{8}$ of the 16 cartons for M30.00 each and the rest for M22.00 each.

Calculate the total amount he receives from selling all the cartons.

Answer (b) M [3]

- (c) Calculate his percentage profit.

Answer (c)% [2]

- 7 Given the sequence $\frac{1}{2}, \frac{1}{6}, \frac{-1}{6}, \frac{-1}{2}, \dots$

(a) Write down the next two terms of the sequence.

Answer (a) [2]

(b) Write an expression for the n^{th} term.

Answer (b) [2]



8 (a) Simplify.

(i) $(m-2)^2 + (m^2-3)$

Answer (a)(i) [2]

(ii) $\frac{x-1}{2} - \frac{3}{4}$

Answer (a)(ii) [2]

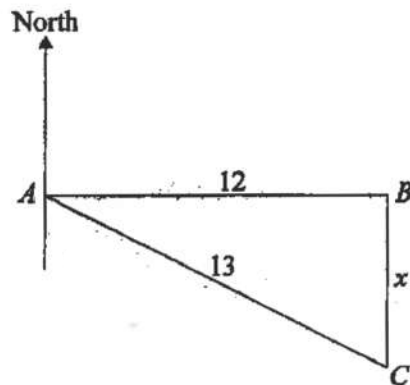
(b) Factorise $a^2 + a - 2ab - 2b$.

Answer (b) [2]



- 9 In the diagram, B is 12 m due east of A .

C is 13 m from A and due south of B .



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Use the following information to answer the questions.

$$\sin^{-1}\left(\frac{12}{13}\right) = 67.4^\circ, \quad \cos^{-1}\left(\frac{12}{13}\right) = 22.6^\circ, \quad \tan^{-1}\left(\frac{12}{13}\right) = 42.7^\circ$$

- (a) Find the length, x .

Answer (a) m [2]

- (b) Calculate angle ACB .

Answer (b) [1]

- (c) Find the bearing of C from A .

Answer (c) [2]



- 10 (a) Given that $3x - 5y = 9$, work out the value of $12x - 20y$.

Answer (a) [2]

- (b) Solve

$$x^2 - 4x = 21.$$

Answer (b) $x = \dots\dots\dots$, $x = \dots\dots\dots$ [3]

- (c) Make t the subject of the formula.

$$P = \frac{\sqrt{t}}{3R}$$

Answer (c) [2]



11 Here is a list of numbers.

8, 0, 3, 3, 1, 7, 4, 3, 4, 2

(a) Find

(i) the range,

Answer (a)(i) [1]

(ii) the mode,

Answer (a)(ii) [1]

(iii) the median.

Answer (a)(iii) [1]

(b) A number is chosen at random from the ten and replaced, and a second number is chosen at random from the ten numbers.

Find the probability that both chosen numbers equal three.

Answer (b) [2]

12 The mean of 12, 18, 21, x and 13 is 17.

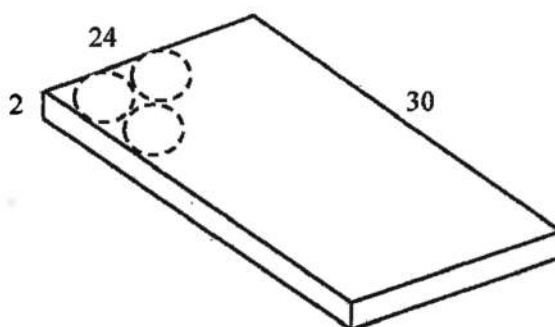
Find the value of x .

Answer [3]



- 13 The shape is a cuboid and it is made of dough.

The dimensions of the cuboid are $24\text{ cm} \times 30\text{ cm} \times 2\text{ cm}$.



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Cylindrical biscuits of diameter 6 cm are cut out of the cuboid.

- (a) State the number of edges the cuboid has.

Answer (a) [1]

- (b) Calculate in terms of π , the amount of dough needed for making one biscuit.

Answer (b) cm^3 [2]



- (c) (i) Find the largest number of whole biscuits that can be cut from the cuboid.

Answer (c)(i) [2]

- (ii) For the number of biscuits in part (c)(i), calculate, in terms of π , the amount of dough not used.

Answer (c)(ii) cm^3 [2]

