



## Perimeter, area and volume

Where  $a$  and  $b$  are the lengths of the parallel sides and  $h$  is their perpendicular separation:

$$\text{Area of a trapezium} = \frac{1}{2}(a+b)h$$

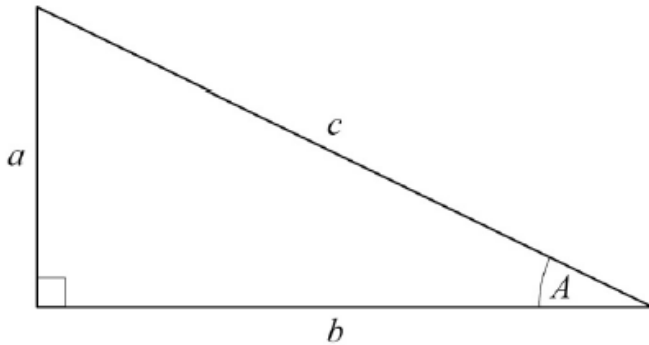
Volume of a prism = area of cross section  $\times$  length

Where  $r$  is the radius and  $d$  is the diameter:

$$\text{Circumference of a circle} = 2\pi r = \pi d$$

$$\text{Area of a circle} = \pi r^2$$

## Pythagoras' Theorem and Trigonometry

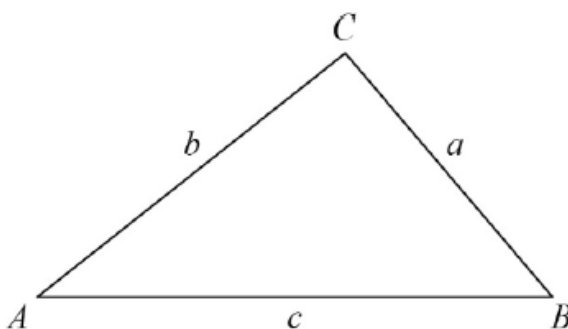


In any right-angled triangle where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:

$$a^2 + b^2 = c^2$$

In any right-angled triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides and  $c$  is the hypotenuse:

$$\sin A = \frac{a}{c} \quad \cos A = \frac{b}{c} \quad \tan A = \frac{a}{b}$$



In any triangle  $ABC$  where  $a$ ,  $b$  and  $c$  are the length of the sides:

$$\text{sine rule: } \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\text{cosine rule: } a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{Area of triangle} = \frac{1}{2}ab \sin C$$

## Compound Interest

Where  $P$  is the principal amount,  $r$  is the interest rate over a given period and  $n$  is number of times that the interest is compounded:

$$\text{Total accrued} = P \left( 1 + \frac{r}{100} \right)^n$$

## Quadratic formula

The solution of  $ax^2 + bx + c = 0$  where  $a \neq 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

## Probability

Where  $P(A)$  is the probability of outcome  $A$  and  $P(B)$  is the probability of outcome  $B$ :

$$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$P(A \text{ and } B) = P(A \text{ given } B) P(B)$$

1 Three of the angles of a quadrilateral are  $100^\circ$ ,  $100^\circ$  and  $80^\circ$

1 (a) Work out the size of the 4th angle.

[1 mark]

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Answer \_\_\_\_\_

1 (b) Write down a possible name for this quadrilateral.

[1 mark]

Answer \_\_\_\_\_

2 Write down an improper fraction equivalent to 1.375

[1 mark]

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Answer \_\_\_\_\_

3 Write down the equation of the  $x$ -axis

[1 mark]

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Answer \_\_\_\_\_

4 Write 300 as a product of its prime factors.

[2 marks]

Answer \_\_\_\_\_

5 60 people took a test.  
Before the test, they predicted whether they would pass or fail.

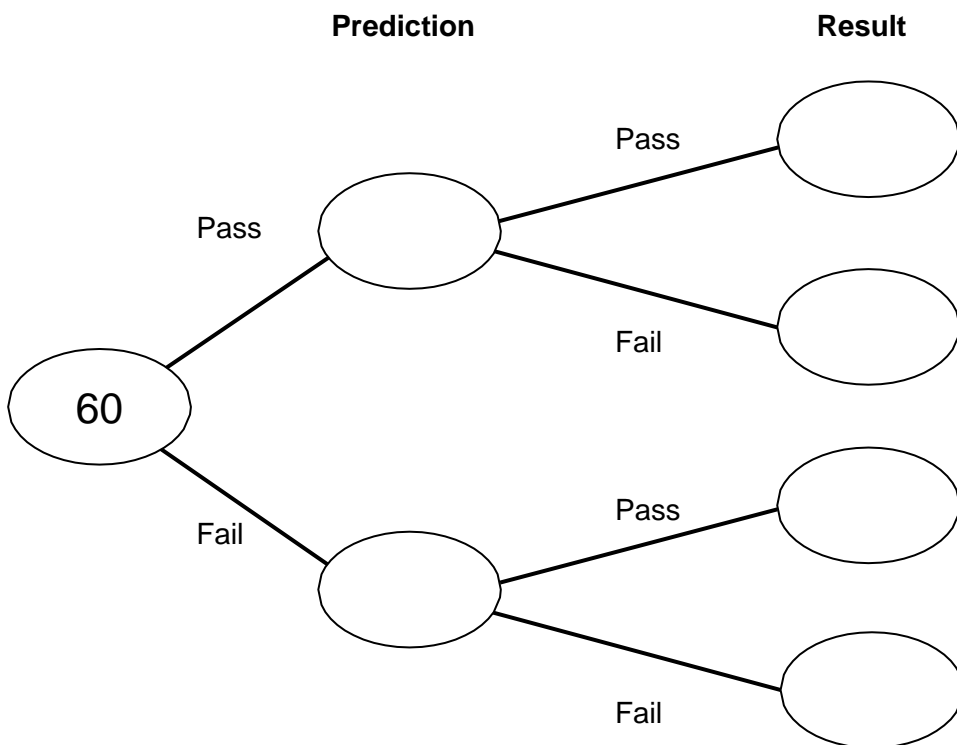
40 people predicted they would pass.

51 people did pass.

Of these 51 people, the ratio that predicted pass to fail was 2:1

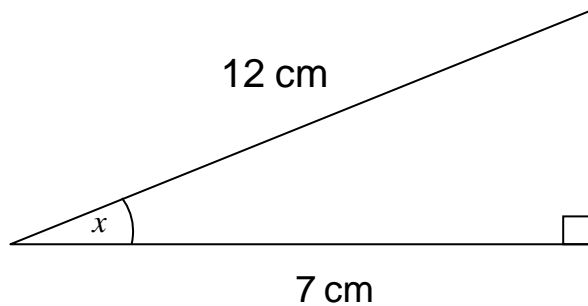
Complete the frequency tree.

[3 marks]



6 (a) Work out the size of angle  $x$

[3 marks]



Not drawn accurately

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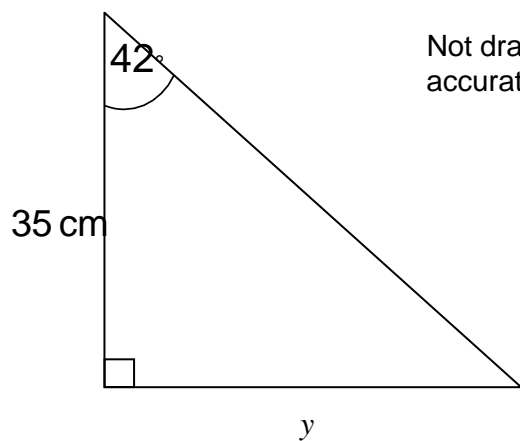
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Answer \_\_\_\_\_ degrees

6 (b) Work out length  $y$

[3 marks]



Not drawn accurately

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Answer \_\_\_\_\_ cm

Turn over ▶

7 Expand and simplify  $(y + 8)(y - 3)$

[2 marks]

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Answer \_\_\_\_\_

8 Tomas ran a Lucky Dip stall.

**LUCKY DIP**

Tickets 50p

Tickets ending 88 win £10

Tickets ending 9 win £2

There were 800 tickets, numbered 1 to 800  
Tomas sold **all** the winning tickets, and **some** of the losing tickets.  
He made a profit of £155

How many **losing** tickets did he sell?

[5 marks]

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Answer \_\_\_\_\_



**10**

Work out the equation of the line that

is parallel to the line

$$y = 4x - 1$$

passes through

$$(-1, 1)$$

**[3 marks]**

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Answer \_\_\_\_\_



11 Sophie sells birthday cards.

She adds 40% profit to the cost price.

She sells the cards for £2.66 each.

She wants to increase her profit to 50% of the cost price.

How much should she sell each card for?

[3 marks]

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Answer £ \_\_\_\_\_

12  $(7 \times 10^a) + (7 \times 10^b) + (7 \times 10^c) = 7070.07$

Write down a possible set of values of  $a$ ,  $b$  and  $c$ .

[3 marks]

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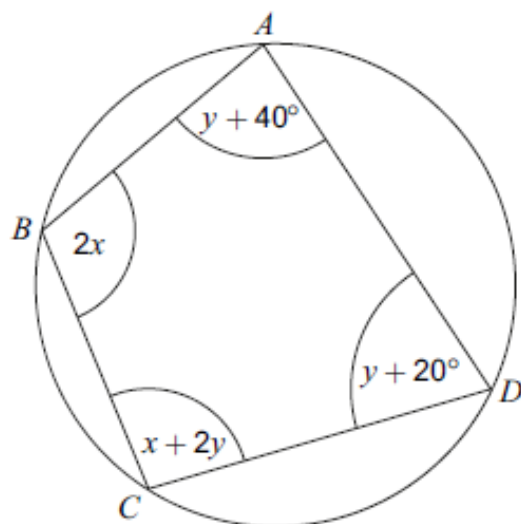
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$a =$  \_\_\_\_\_       $b =$  \_\_\_\_\_       $c =$  \_\_\_\_\_

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$ABCD$  is a cyclic quadrilateral.



Not drawn accurately

Work out the values of  $x$  and  $y$ .

[5 marks]

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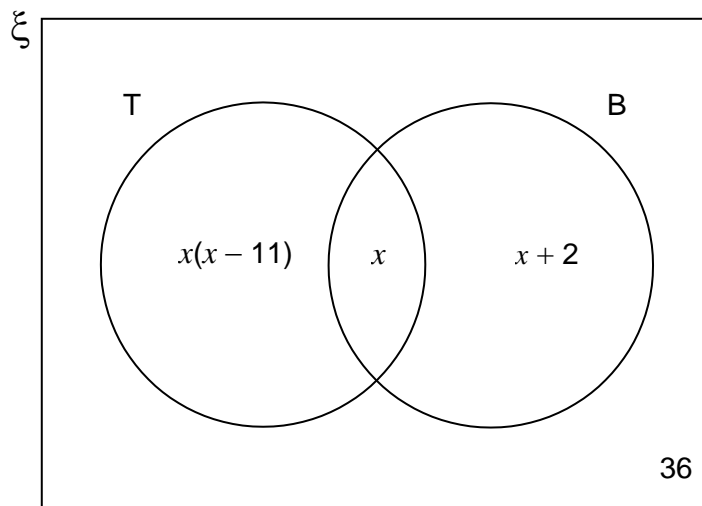
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The Venn diagram shows information about a coin collection.

$\xi$  = 150 coins in the collection

T = coins from the 20th century

B = British coins



A coin is chosen at random.

It is British.

Work out the probability that it is from the 20th century.

[5 marks]

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Answer \_\_\_\_\_

