

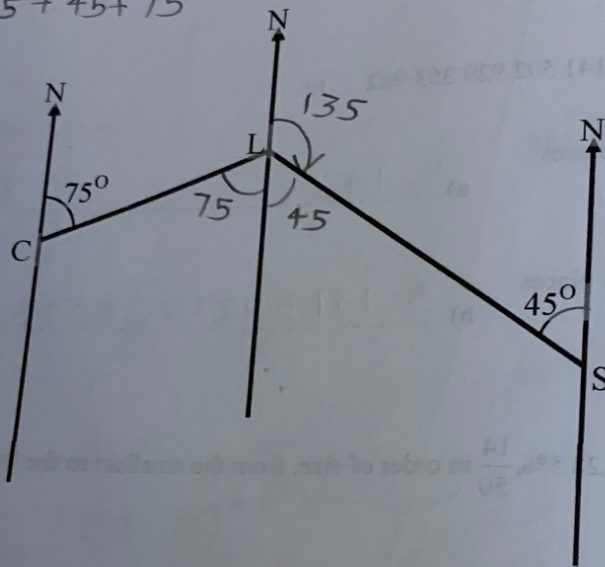
12. Write down the bearing of:

a) L from C 75°

b) S from L 135°

c) C from L 255°

$$135 + 45 + 75$$



c) Complete the table below for $y = x^2 - 4x$.

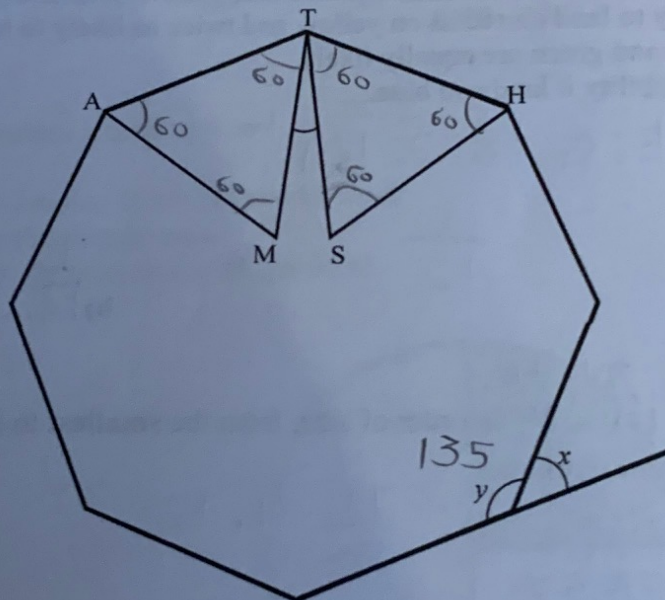
| | | | | | | | | |
|-----|----|---|----|----|----|---|---|----|
| x | -1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| y | 5 | 0 | -3 | -4 | -3 | 0 | 5 | 12 |

d) Hence draw the graph of $y = x^2 - 4x$ on the same axes.

e) Write down the co-ordinates of the points where the graphs intersect.
Give your answers correct to 1 d.p.

c) (0.6, -1.9) and (5.4, 7.9)

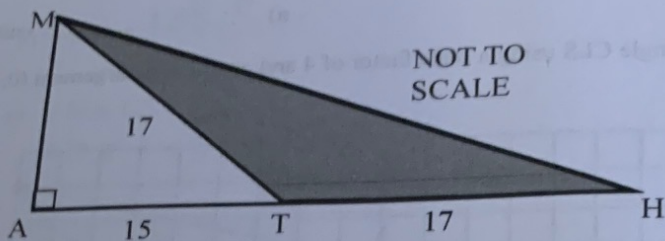
13. Two equilateral triangles MAT and THS are drawn on the sides of a regular octagon.



a) Calculate the exterior angle x and the interior angle y of the regular octagon.

a) exterior angle $x = 45$ interior angle $y = 135$

14. a) In the right-angled triangle MAT, AT = 15, MT = 17. TH = 17. Calculate the length MA. (lengths given are in cm)



$$17^2 - 15^2 = 64$$

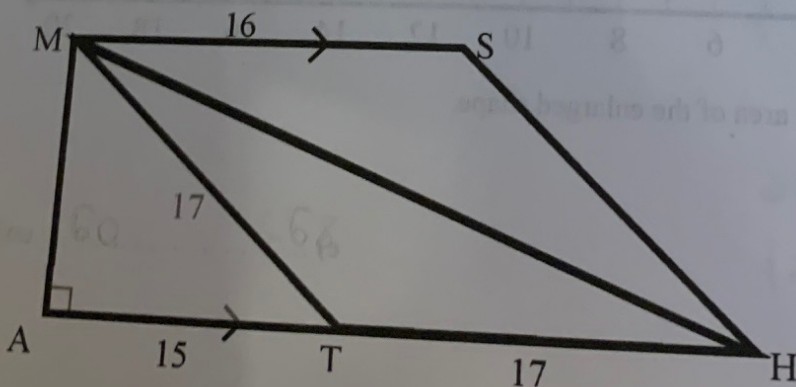
a) MA = 8 cm

- b) Calculate the area of the shaded triangle MTH.

$$\begin{aligned} & \frac{1}{2}(8)(32) - \frac{1}{2}(8)(15) \\ &= 128 - 60 \\ &= 68 \end{aligned}$$

b) 68 cm²

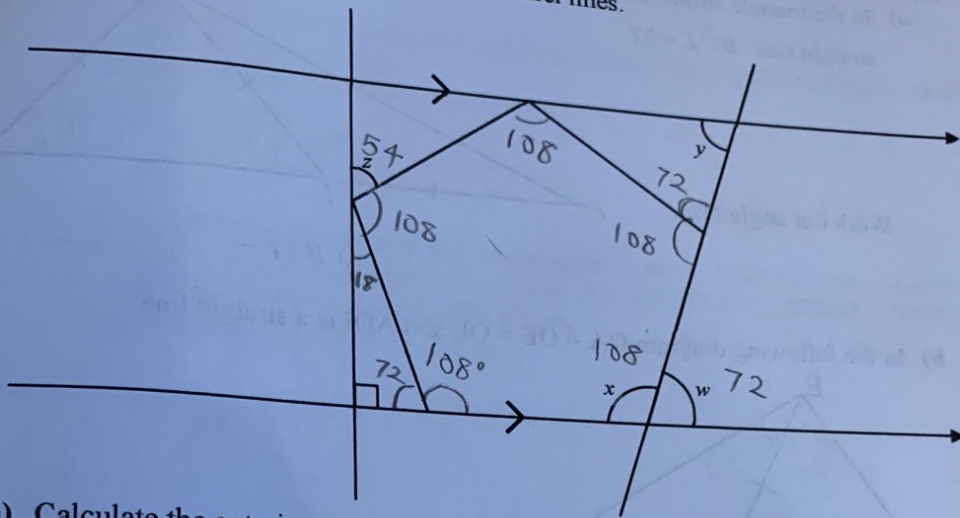
- c) Calculate the area of the trapezium MAHS.



$$\frac{1}{2}(16 + 32)(8)$$

c) 192 cm²

15. A regular pentagon is shown within two parallel lines.



a) Calculate the exterior angle w and the interior angle x .

a) exterior angle $w = 72$ interior angle $x = 108$

b) Calculate the angle y .

Parallel lines

$$x + y = 180$$

$$y = 180 - 108$$

b) $y = 72$

c) Calculate the angle z .

c) $z = 54$

16. a) Express 2009 as a product of its prime factors.

$$\begin{array}{r} 2009 \\ \quad \uparrow \\ 7 \times 287 \\ \quad \quad \uparrow \\ \quad \quad 7 \times 41 \\ \quad \quad \quad \uparrow \\ \quad \quad \quad 7^2 \times 41 \end{array}$$

a) $2009 = 7^2 \times 41$

- b) Given that $1996 = 2^2 \times 499$, use your answer to part (a) to work out in its simplest form $\frac{1996 \times 287 \times 42}{2009 \times 998}$.

$$\frac{2^2 \times \cancel{499} \times \cancel{287} \times 42}{7^2 \times \cancel{41} \times \cancel{998}}$$

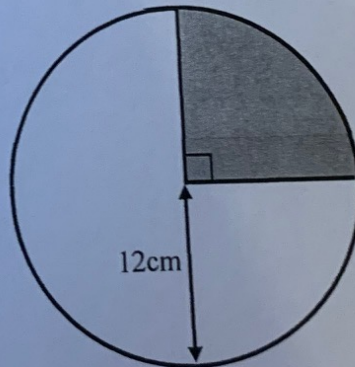
b) $\frac{1996 \times 287 \times 42}{2009 \times 998} = 12$

$$= \frac{4 \times 7 \times \cancel{42}}{7^2 \times \cancel{2}} = \frac{4 \times 7 \times 21}{7^2} = \frac{4 \times 21}{7} = \frac{84}{7} = 12$$

17. For a circle radius r , area $A = \pi r^2$.

- a) A circle of radius 12cm is shown below. Calculate the shaded area. (leave your answer as a multiple of π)

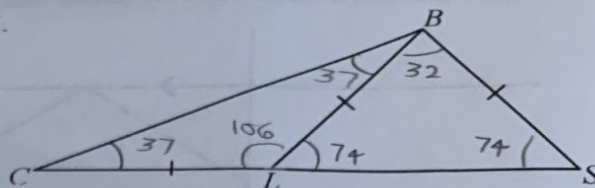
$$\begin{aligned} & \frac{\pi (12)^2}{4} \\ & = \frac{144\pi}{4} \\ & = 36\pi \end{aligned}$$



a) 36π cm^2

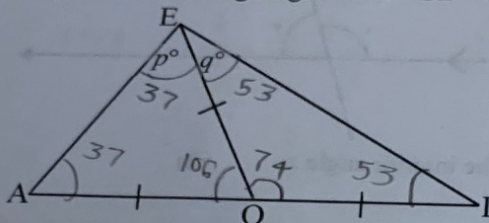
16. a) In the triangle shown below, the lengths CL , LB and BS are all equal and CS is a straight line. $\hat{BCL} = 37^\circ$.

Work out angle BSL .



a) $\hat{BSL} = 74$

- b) In the following diagram $OA = OE = OI$, and AOI is a straight line.

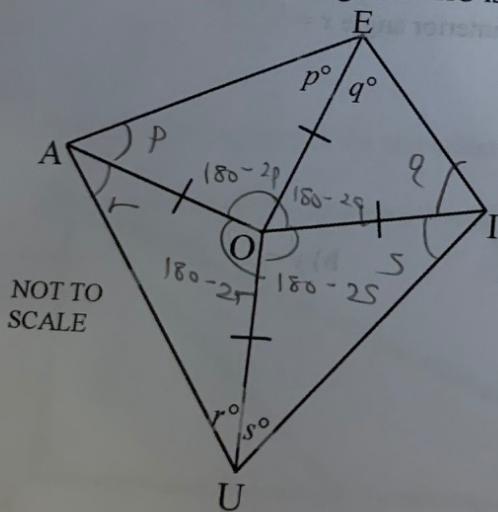


If $p = 37$, find the value of q .

b) $q = 53$

- c) In the following diagram $AEIU$ is a quadrilateral and $OA = OE = OI = OU$.

Find the value of $p + q + r + s$.
(You must show all your working)



$$180 - 2p + 180 - 2q + 180 - 2r + 180 - 2s = 360$$

c) $p + q + r + s = 180$

$$720 - 2(p + q + r + s) = 360$$

$$2(p + q + r + s) = 360$$

$$p + q + r + s = 180$$

17.

- a) A 3 sided spinner is coloured red, yellow and blue. The probability it lands on red is 0.3 and on yellow is 0.45. What is the probability it lands on blue?

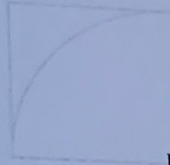
$$1 - 0.3 - 0.45$$

a) 0.25

- b) Another spinner is four sided and coloured red, yellow, blue and green. It is four times as likely to land on red as on yellow and twice as likely to land on yellow as on blue. Blue and green are equally likely. Find the probability it lands on blue.

$$R : Y : B : G = 8 : 2 : 1 : 1$$

$$\frac{1}{12}$$



b) $\frac{1}{12}$

18.

- a) Express 1974 as a product of its prime factors. (show your working in a factor tree)

$$\begin{array}{l} 1974 \\ /) \\ 2 \times 987 \\ /) \\ 3 \times 329 \\ /) \\ 7 \times 47 \end{array}$$

a) $1974 = 2 \times 3 \times 7 \times 47$

- b) Given that $1645 = 5 \times 7 \times 47$, use your answer to part (a) to work out in its simplest form

$$\frac{2}{1645} + \frac{7}{1974} =$$

$$\frac{2}{5 \times 7 \times 47} + \frac{7}{2 \times 3 \times 7 \times 47}$$

b) $\frac{1}{210}$

$$\text{LCM} = 2 \times 3 \times 5 \times 7 \times 47$$

$$\frac{2(2)(3) + 7(5)}{2 \times 3 \times 5 \times 7 \times 47} = \frac{47}{9870} = \frac{1}{210}$$

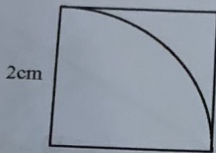
19. In this question use $\pi = 3.14$.
For a circle radius r , area $A = \pi r^2$.

a) Calculate the area of a circle of radius 2cm, correct to 2d.p.

$$3.14(4)$$

a) 12.56 cm²

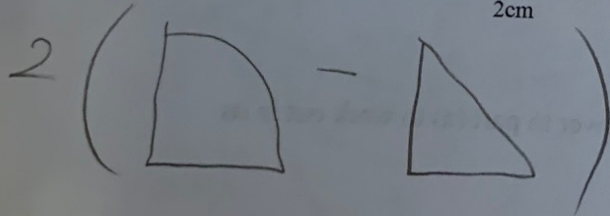
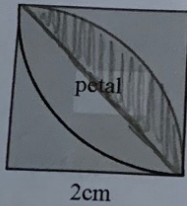
b) A square of side 2cm has a quarter circle drawn on the edges as shown.
Calculate the area of the quarter circle, correct to 2d.p.



$$\frac{3.14(4)}{4} = 3.14$$

b) 3.14 cm²

c) The square now has quarter circles which overlap to create a 'petal'.
Calculate the 'petal' area, correct to 2d.p.



c) 2.28 cm²

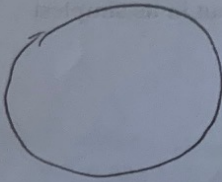
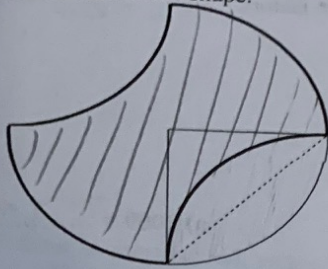
$$2 \left[3.14 - \frac{1}{2} (2)(2) \right]$$

(from b)

$$2 (3.14 - 2) = 2.28$$

END OF EXAM

b) Two quarter arcs are reflected to give the shape below..
Calculate the area of the shape.



b) cm²

END OF EXAM

