

Number Nest Weekly Challenge



Warm up

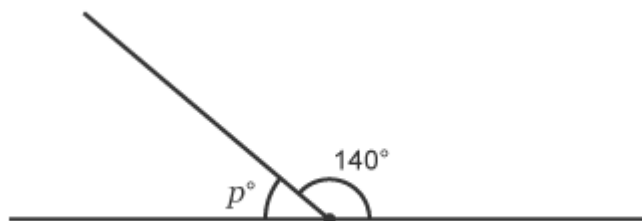
1. Name all four types of triangles: **Equilateral, Right-angle, isosceles, scalene.**
2. Write down the formula of the area of a triangle: $\frac{1}{2} \times \text{base} \times \text{height}$
3. What is the 12th prime number? **37**
4. What is $1602 \div 3$? **534**

Activity

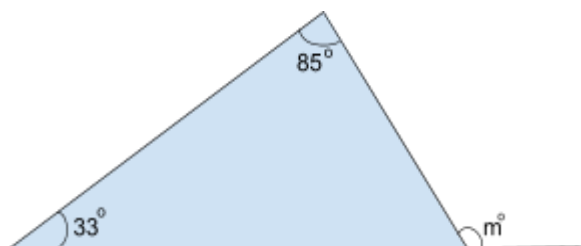
1. Find the following angles (diagrams are not to scale):

Angles on a straight line add up to 180° so $p = 180 - 140 = 40$

$p = \underline{40}^\circ$



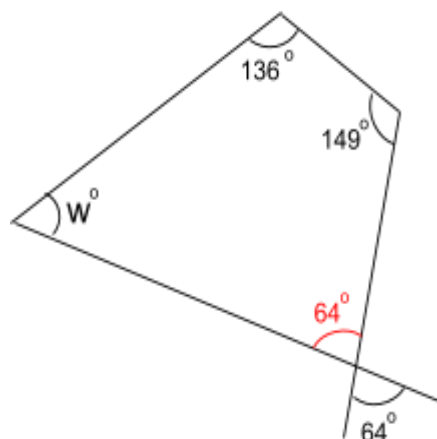
The exterior angle of the triangle is the sum of the two opposite interior angles so $m = 85 + 33 = 118$



$m = \underline{118}^\circ$

Angles that are vertically opposite are equal and angles in a quadrilateral add up to 360° so $w = 360 - 136 - 64 - 149 = 11$

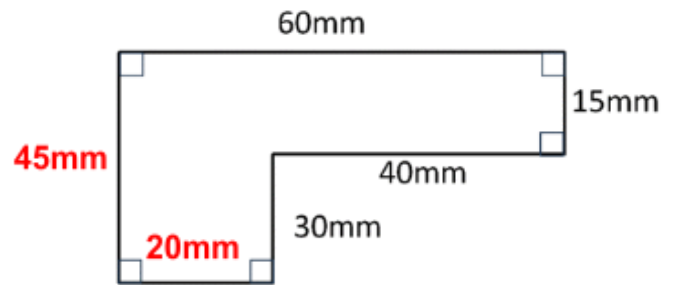
$w = \underline{11}^\circ$



2. What is the perimeter of the following shape in cm?

$$60 + 45 + 20 + 30 + 40 + 15 = 210 \text{ mm}$$

$$= 21 \text{ cm}$$

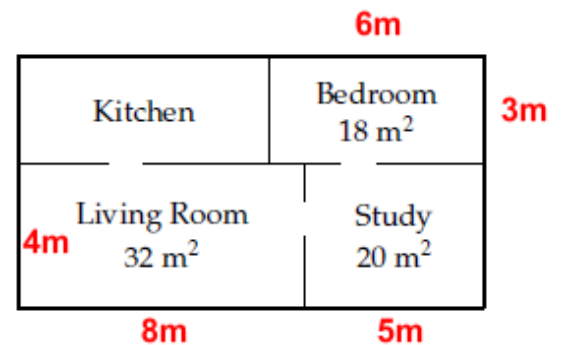


3. The diagram shows a floor plan of a house. The areas of three of the rooms are shown. Both the bedroom and living room are twice as long as they are wide. What is the area of the kitchen?

The dimensions of the bedroom must be 3m x 6m as 6m is twice as long as 3m. The living room must be 4m x 8m as 8m is twice as long as 4m. Since the height of the study is the same as the living room, its length must be $20 \div 4 = 5\text{m}$

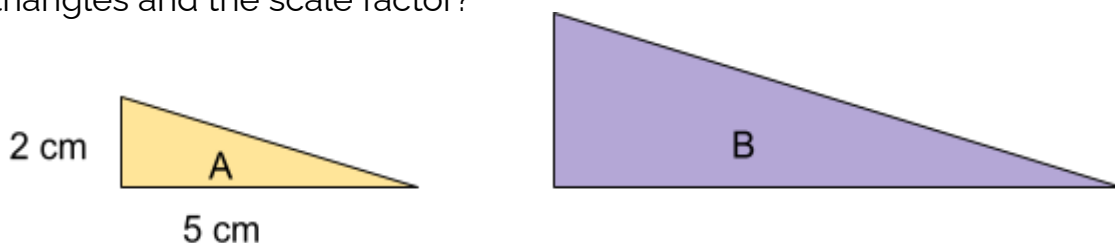
Therefore the length of the kitchen must be $8 + 5 - 6 = 7\text{m}$

So the area of the kitchen is $7 \times 3 = 21\text{m}^2$



Puzzle

Triangle A is enlarged by a scale factor of 3 to form triangle B. Work out the area of both triangles. What can you deduce from the area of the triangles and the scale factor?



Area of triangle A is $\frac{1}{2} \times 2 \times 5 = 5 \text{ cm}^2$

The height of triangle B: $2 \times 3 = 6 \text{ cm}$

The base of triangle B: $5 \times 3 = 15 \text{ cm}$

So the area of triangle B is $\frac{1}{2} \times 6 \times 15 = 45 \text{ cm}^2$

We can see from the area of the two triangles that the area scale factor is the square of the length scale factor i.e. $3^2 = 9$ and $5 \text{ cm}^2 \times 9 = 45 \text{ cm}^2$

