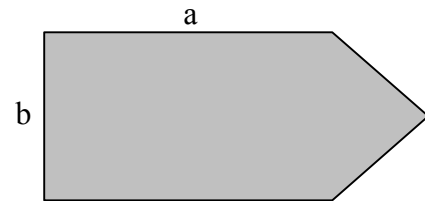


Formulae

1. $P = 4A + 3C$. Calculate P when $A = 35$ and $C = 18$.
2. $H = PQ - 5Q$. Find H when $P = 7.8$ and $Q = 2.25$.
3. $M = n^2 - 6n$. Find M when $n = 8.5$.
4. $T = xy + x^2$. Find T when $x = 43$ and $y = 26$.
5. $B = \frac{1}{2}ac + c^3$. Calculate B when $a = 1.5$ and $c = 4$.
6. $G = 3mn - n^2$. Calculate G when $m = 60$ and $n = 15$.
7. $F = \frac{2}{3}a^2 - \frac{1}{2}c^2$. Find F when $a = 15$ and $c = 12$.
8. $Y = x(2x - w)$. calculate Y when $x = 5.5$ and $w = 4.1$.
9. $H = 4(d^2 + c^2)$. Calculate H when $d = 32$ and $c = 18$.
10. $M = \frac{x^2 - y}{4}$. Find M when $x = 18$ and $y = 24$.

11. The diagram opposite shows a metal plate.
The area of this plate is given by

$$A = \frac{3}{2}ab.$$

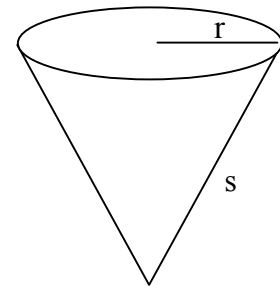


Calculate the area of this plate when $a = 6.2$ cm and $b = 3.7$ cm.

12. The surface area of a cone is given by the formula

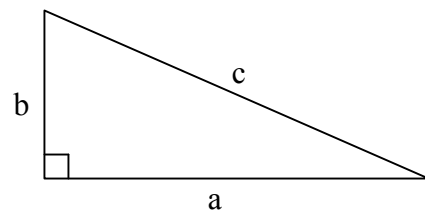
$$A = \pi rs + \pi r^2$$

Calculate the surface area of a cone when $r = 15$ cm and $s = 8.5$ cm.



13. In the triangle opposite

$$c = \sqrt{a^2 + b^2}$$



Calculate c when $a = 72$ cm and $b = 30$ cm.

14. Given $H = \sqrt{\frac{kn}{R}}$, find H when $k = 4.6$, $n = 3.5$ and $R = 0.75$.

15. To convert degrees Fahrenheit (F) into degrees Celsius (C) we use the formula

$$C = \frac{5(F - 32)}{9}$$

Change 86 degrees Fahrenheit into degrees Celsius.



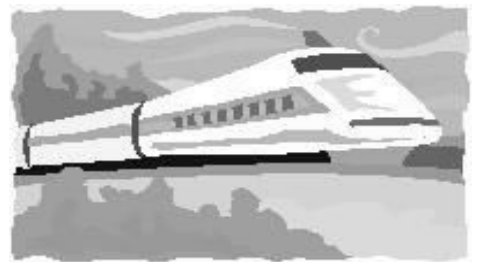
16. The formula $F = \frac{m(v - u)}{t}$ occurs in mechanics.

Calculate F when $m = 25$, $v = 46$, $u = 25.5$ and $t = 4$.

17. The acceleration of a train is found by using the formula

$$A = \frac{v^2 - u^2}{2s}$$

Calculate a when $v = 76$, $u = 18$ and $s = 2.5$.



18. The time, T seconds, taken for a pendulum to swing is given by

$$T = 2\pi\sqrt{\frac{l}{g}}$$

where l is the length of the pendulum and g is the gravitational acceleration.

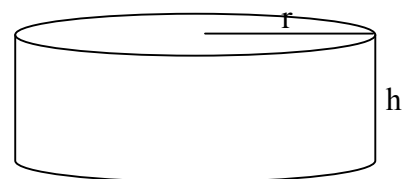
Calculate the time taken for the pendulum to swing when the length of the pendulum is 60 cm and $g = 9.55$.



19. The volume of a cylinder is given by the formula

$$V = \pi r^2 h$$

Calculate the volume of a cylinder when $r = 30$ mm and $h = 25$ mm.



20. The distance travelled by a rocket is given by

$$s = ut + \frac{1}{2} at^2$$

Calculate s when $u = 5.5$, $t = 24$ and $a = 12.4$.



21. The volume of a sphere is given by the formula

$$V = \frac{4}{3} \pi r^3$$

Calculate the volume of a sphere where $r = 6.6$ cm.



22. The first 6 triangular numbers are 1, 3, 6, 10, 15 and 21.

To find the sum of a set of triangular numbers we use the formula

$$S = \frac{1}{6} n(n+1)(n+2)$$

Calculate the sum of the first 15 triangular numbers i.e. when $n = 15$.

23. The resistance, R, in copper wire is found using the formula

$$R = \frac{3.75L}{D^2}$$

where L is the length of the wire in metres and D is the diameter of the wire in millimetres.

Calculate R when $L = 200$ metres and $D = 2.5$ millimetres.



24. The area of a quadrilateral drawn inside a circle can be found using the formula

$$A = \sqrt{(s-a)(s-b)(s-c)(s-d)}$$

$$\text{where } s = \frac{a+b+c+d}{2}.$$

Calculate the area of a quadrilateral when

$a = 10$ cm, $b = 7.8$ cm, $c = 9.1$ cm and $d = 6.5$ cm.

