# IGCSE Revision 2

1. Evaluate;
   (a) $2\frac{1}{3} + 1\frac{4}{7}$. $\boxed{3\frac{19}{21}}$
   (b) $2\frac{1}{3} - 1\frac{4}{7}$. $\boxed{\frac{16}{21}}$
   (c) $2\frac{1}{3} \times 1\frac{4}{7}$. $\boxed{3\frac{2}{3}}$
   (d) $2\frac{1}{3} \div 1\frac{4}{7}$. $\boxed{1\frac{16}{33}}$
2. Given that $4046 \div 14 = 289$, without a calculator, what is;
   (a) $2890 \times 0.014$? $\boxed{40.46}$
   (b) $\dfrac{4.046}{140}$? $\boxed{0.0289}$
   (c) $404600 \div 2.89$? $\boxed{140000}$
3. Convert $4.6\text{m/s}^2$ (an acceleration) into $\text{km/hr}^2$. $\boxed{59616\text{km/hr}^2}$
4. The perpendicular height of a triangle is 5cm. Its area is $72.5\text{cm}^2$. What is its base length? $\boxed{29cm}$
5. The perpendicular height of a triangle is $h$. Its area is $A$. What is its base length? $\boxed{b = \frac{2A}{h}}$
6. The triangle $ABC$ has a right angle at $B$. The length $AC$ is $x$. The angle $A$ is 25 degrees. Find an *expression* for the area of the triangle. $\boxed{\frac{x^2}{2}(\sin 25)(\cos 25)}$
7. A triangle has lengths $x$, $x$ and $y$. Find a *formula* for the area ($A$) of the triangle. (Don't use Heron's formula.) $\boxed{A = \frac{1}{2}y\sqrt{x^2 - \frac{y^2}{4}}}$
8. A cylinder has surface area of $500\pi\text{cm}^2$. Its radius is 2cm. What is its volume? $\boxed{V = 492\pi}$
9. The equation $2x + kx + 3 = -4x - 2kx - 6$ has the solution $x = 4$. What must $k$ be? $\boxed{k = -2\frac{5}{12}}$
10. Make $x$ the subject of $c = \dfrac{\frac{x+a}{x} + b}{d}$. $\boxed{x = \frac{a}{cd-b-1}}$
11. A triangle $A$'s vertices lie on the points $(1, 3)$, $(2, 4)$ and $(2, 0)$. Find the vertices of the image of $A$ under the following transformations;
    (a) A translation of $\binom{-3}{1}$. $\boxed{(-2, 4), (-1, 5), (-1, 1)}$
    (b) A reflection in the line $y = x$. $\boxed{(3, 1), (4, 2), (0, 2)}$
    (c) A rotation of 90 degrees anti-clockwise about the point $(-1, -2)$. $\boxed{(-6, 0), (-7, 1), (-3, 1)}$
    (d) An enlargement of scale factor $-2$ with centre of enlargement $(1, 1)$. $\boxed{(1, -3), (-1, -5), (-1, 3)}$
12. The triangle from the above question has been transformed. The vertices of the image lie at the points $(7, 7)$, $(6, 6)$ and $(6, 10)$. Describe *fully* the single transformation that $A$ has undergone. $\boxed{\text{Enlargement, scale factor } -1 \text{ with centre } (4, 5)}$
13. A shape has undergone an enlargement. The area of the image is 9 times larger than the object. What are the possible value(s) of the scale factor? $\boxed{3 \text{ or } -3}$

14. The distance between the two points $(2, 3)$ and the point $(7, k)$ is 13. What are the possible values of $k$?

$\boxed{k = 15 \text{ or } k = -9}$

15. The trapezium $ABCD$ has side $AD$ parallel to $BC$. It also has angle $A$ and angle $B$ right angles. $AD = x$ and $AB = 2x$. Angle $CAB$ is 70 degrees. What is the area of $ABCD$?

$\boxed{A = 2x^2 \tan 70 + x^2}$