

FORMULAS FOR NATIONAL TEST IN MATHEMATICS – COURSE A

PREFIXES

Symbol	T	G	M	k	h	d	c	m	μ
Name	tera	giga	mega	kilo	hekto	deci	centi	milli	mikro
Power of 10	10^{12}	10^9	10^6	10^3	10^2	10^{-1}	10^{-2}	10^{-3}	10^{-6}

EXPONENTS

For all numbers x and y and positive numbers a

$$a^x \cdot a^y = a^{x+y} \quad \frac{a^x}{a^y} = a^{x-y} \quad (a^x)^y = a^{xy}$$

$$a^{\frac{1}{2}} = \sqrt{a} \quad a^{\frac{1}{3}} = \sqrt[3]{a}$$

$$a^{-x} = \frac{1}{a^x} \quad a^0 = 1$$

FUNCTIONS

Linear function

$$y = kx + m$$

if $y = kx$ then y is proportional to x

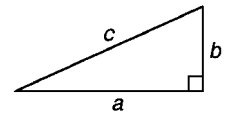
Exponential function

$$y = C \cdot a^x$$

GEOMETRY

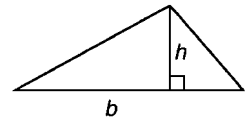
Pythagoras' theorem

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



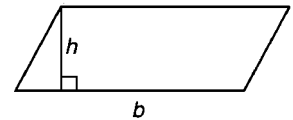
Triangle

$$\text{area} = \frac{bh}{2}$$



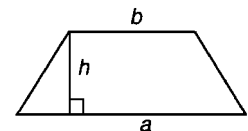
Parallelogram

$$\text{area} = bh$$



Parallel trapezium

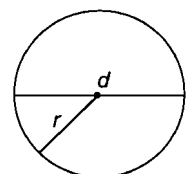
$$\text{area} = \frac{h(a+b)}{2}$$



Circle

$$\text{area} = \pi r^2 = \frac{\pi d^2}{4}$$

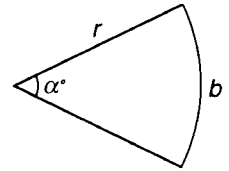
$$\text{circumference} = 2\pi r = \pi d$$



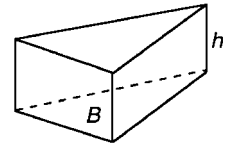
Circle sector

$$\text{arc length } b = \frac{\alpha}{360} \cdot 2\pi r$$

$$\text{area} = \frac{\alpha}{360} \cdot \pi r^2 = \frac{br}{2}$$

**Prism**

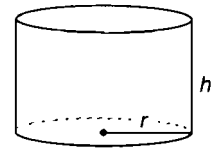
$$\text{volume} = Bh$$

**Cylinder**

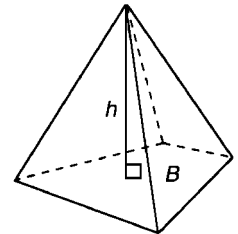
Right circular cylinder

$$\text{volume} = \pi r^2 h$$

$$\text{mantel area} = 2\pi r h$$

**Pyramid**

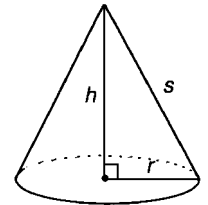
$$\text{volume} = \frac{Bh}{3}$$

**Cone**

Right circular cone

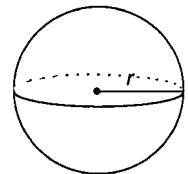
$$\text{volume} = \frac{\pi r^2 h}{3}$$

$$\text{curved surface area} = \pi r s$$

**Sphere**

$$\text{volume} = \frac{4\pi r^3}{3}$$

$$\text{area} = 4\pi r^2$$

**TRIGONOMETRY Right-angled triangle**

$$\cos v = \frac{a}{c}$$

$$\sin v = \frac{b}{c}$$

$$\tan v = \frac{b}{a}$$

