GradReady Physics® Formula Sheet

CONSTANT ACCELERATION FORMULAE

$$V = u + at$$

$$S = ut + 0.5at^2$$

$$S = vt - 0.5at^2$$

$$S = \frac{(u + v) \times t}{2}$$

$$v^2 = u^2 + 2as$$

v = final velocity (m/s)
u = initial velocity (m/s)
a = acceleration (m/s^2)
s = displacement (m)
t = time (s)

TORQUE

$$T = F \times d \times \sin(\theta)$$

T = Torque (Nm)
F = Force applied on lever (N)
d = Distance that the force is applied from the axis of rotation (m)
θ = Angle between force vector and distance vector, sin(θ) is equal to 1 if perpendicular

NEWTON'S 2ND LAW OF MOTION

$$\Sigma F = m \times a$$

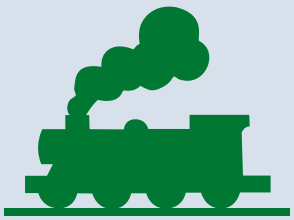
ΣF = net force acting on an object (N)
m = mass of object (kg)
a = acceleration of object (m/s^2)

MECHANICAL ENERGY

$$ME = U_s + U_g + KE$$

ME = mechanical energy (J)
Us = spring potential energy, a.k.a elastic potential energy (J)
Ug = gravitational potential energy (J)
KE = kinetic energy (J)

MOMENTUM



$$p = mv$$

p = Momentum (kg x m/s)
m = Mass (kg)
v = Velocity (m/s)

GRAVITATIONAL POTENTIAL ENERGY

$$U_g = mgh$$

Ug = gravitational potential energy (J)
m = Mass of object (kg)
g = Acceleration due to gravity = 9.8 m/s^2 = gravitational field strength = 9.8 N/kg
h = Vertical height above a reference level (m)

TEMPERATURE CHANGE

$$Q = m \times C \times (T_{final} - T_{initial})$$

Q = heat energy applied (J)
m = mass of object (kg)
c = specific heat capacity of object (J/kg/K)
T = initial and final temperatures of object (K)

KINETIC ENERGY

$$KE = \frac{1}{2} mv^2$$

KE = Kinetic energy of object (J)
m = Mass of object (kg)
v = Velocity of object (m/s)

FORCE ON A MOVING CHARGE

$$F = qvb$$

F = Magnetic Force
q = Charge of the particle
v = Velocity of the charged particle
b = Magnetic Field Strength

GRAVITATIONAL FORCE

$$F = \frac{G \times m_1 \times m_2}{r_2}$$

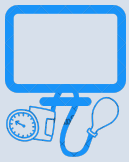
F = gravitational force of attraction from the center of mass of the two objects (N)
G = gravitational constant 6.674×10^{-11} Nm kg
m1 = mass of one of the objects (kg)
m2 = mass of the other object (kg)
r = distance between the center of the mass of the two objects (m)

OHM'S LAW

$$V = IR$$

V = Voltage (volts)
I = Current (amps)
R = Resistance (ohms)

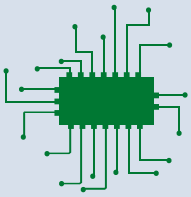
PRESSURE



$$P = \frac{F}{A}$$

P = Pressure (N/m or Pascals)
F = Force applied on a surface (N)
A = Area of surface (m^2)

ELECTRICAL POWER



$$P = IV = I^2R = \frac{V^2}{R}$$

P = Power
V = Voltage (volts)
I = Current (amps)
R = Resistance (ohms)

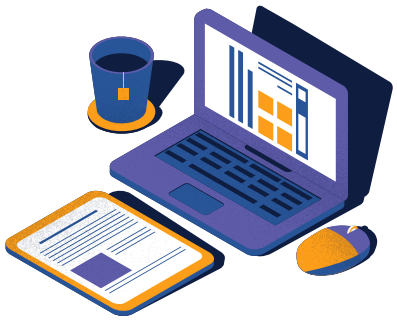
ARCHIMEDES PRINCIPLE

$$F_b = F_{g\ of\ object} = F_{g\ of\ fluid\ displaced} = p_{fluid} \times V_{g\ of\ fluid\ displaced} \times g$$

F_b = Force of buoyance (N)
$F_{g\ of\ object}$ = Weight of object (N)
$F_{g\ of\ fluid\ displaced}$ = Weight of fluid displaced (N)
P_{fluid} = Density of fluid (kg/m^3)
$V_{fluid\ displaced}$ = Volume of fluid displaced by the object in the fluid (m^3)
g = gravitational field strength, a.k.a acceleration due to gravity = 9.8 N/kg = 9.8 m/s^2

GAMSAT® Courses Now Open for 2025-2026!

Enrol Now & Get Access until March 2026



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We've been working hard following the most recent GAMSAT® exam to make updates to our content and industry-leading online learning system based on student feedback, with continuous improvements scheduled throughout the coming year, specifically with revamping our PBL curriculum to put even more emphasis on reasoning skills.

We will also be adding new MCQs to our 5000+ question bank throughout the year, creating new practice exams, and running tutor-led initiatives such as our 1 hour weekly Keep-You-Going online tutoring sessions. We are committed to perfecting our GAMSAT® preparation materials, ensuring you start your prep on the strongest footing.

Join 11,000+ GradReady Students with statistically significant average improvement of 20+ Percentile Points, 11+ years in a row!

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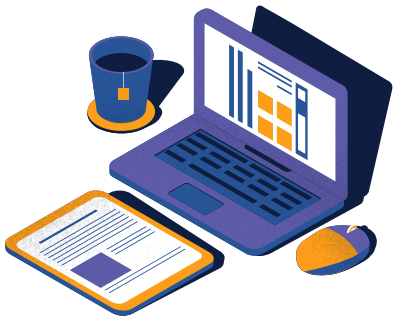

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Last Chance to Sign Up for Our GAMSAT® Mock Exam & Review Session!

Signups Close Tuesday 18th of February

Get access to 2 Mock Exams on a platform that mimic the actual ACER GAMSAT® Exam. Each Mock Exam is split into 2 days - 1 day for Written Communication and 1 day for Reasoning in Biological and Physical Sciences Section - to simulate the actual GAMSAT®.

The first Mock Exam will be running on the 19th of February and 8th of March. The second Mock Exam will be running on the 21st of February and 9th of March. There will also be a full-day Review Session on Saturday March 15th.

GradReady's GAMSAT® Mock Exam features industry-leading technology that provides you with a percentile ranking, not only for your overall performance, but with a breakdown for each individual section.

Take advantage of our updated Mock Exam, with new MCQs and detailed video solutions, as well as a Review Session for an in-depth breakdown with our expert tutors. Consolidate your prep for the GAMSAT® and Simulate the real exam to put yourself in the best position possible for the actual day.

Sign ups close Tuesday 18th of February at 7pm Melbourne time - Signup Today!

Click Here to Learn More & Sign Up Today, Spots Limited!

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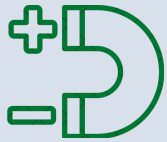
ELECTROSTATIC FORCE



$$F = \frac{k \times q_1 \times q_2}{r^2}$$

F = electrostatic force acting between two charged objects (N)
k = Coulomb's constant = 9.0* 10 NmC
q1 = magnitude of one of the charged object (C)
q2 = magnitude of the other charged object (C)
r = distance between the center of the two charges (m)

WORK

$$W = F \times d \times \cos(\theta)$$

W = Work done (J)
F = Force applied on object (N)
d = Distance object moves due to the application of the force (m)
θ = Angle between force vector and displacement vector, cos(θ) is equal to 1 when the force vector is in the same direction as the movement of the object

or

$$W = F \times d$$

W = Work done (J)
F = Component of the force that acts parallel to the distance only (N)
d = Distance object moves due to the application of the force (m)