

Name of the Student: _____

Max. Marks : 22 Marks

Time : 22 Minutes

Mark Schemes

Q1.

(a) 572

allow 1 mark for correct substitution,

ie 220×2.6

allow 1 mark for

$220 \times 260 = 57\ 200$

or

$220 \times 2600 = 572\ 000$

but to score this mark the entire calculation must be shown

2

(b) (i) smooth curve drawn

accept a line that is extrapolated back to 0 degrees, but not through the origin

accept a straight line of best fit (point at 40 degrees can be treated as anomalous and line may stop at 30 degrees)

*do **not** accept straight lines drawn 'dot to dot' or directly from first to last point or a line going through the origin*

1

(ii) increases

accept a positive correlation

*do **not** accept proportional*

1

(iii) long plank

no mark for this, the marks are for the explanation

makes the angle small(er) (than a short plank)

accept increases the distance

accept small(er) slope

1

a small(er) force is needed

or

short plank

no mark for this, the marks are for the explanation

a large(r) force is used over a short(er) distance (1)

less work done (1)

accept less energy transfer

Q2.

- (a) (i) turning effect
accept turning force
accept force \times distance
(accept symbols only if correctly defined)
*do **not** accept newtons \times metres* 1
- (ii) stop apparatus falling over
accept holds the stand in place
accept make it safer / stable
references to balanced / equilibrium are insufficient 1
- (iii) as x increases y increases 1
- in same proportion / ratios
allow both marks for they are directly proportional
or
a specific example eg doubling y , doubles x
allow both marks for a correct answer giving figures
eg they increase in the ratio of 1 to 7
*allow for **1** mark positive correlation* 1
- (iv) the centre of mass of the ruler is at the axis of rotation 1
- (b) 108
*allow **1** mark for correct substitution ie 240×0.45* 2
- newton metres / Nm
symbols must be correct
for full credit the unit must be consistent with the numerical answer 1

[8]

Q3.

- (a) 96
*allow **1** mark for correct substitution*
ie 80×1.2 2
- newton or N
allow Newton
*do **not** allow n* 1
- (b) (i) direction

1

- (ii) velocity and time are continuous (variables)
answers must refer to both variables
accept the variables are continuous / not categoric
accept the data / 'it' is continuous
accept the data / 'it' is not categoric

1

- (iii) **C**

1

velocity is not changing
*the 2 marks for reason may be scored even if **A** or **B** are chosen*
accept speed for velocity
accept speed is constant (9 m/s)
*accept **not** decelerating*
*accept **not** accelerating*
accept reached terminal velocity

1

forces must be balanced
accept forces are equal
accept arrows are the same length / size

or

resultant force is zero
*do **not** accept the arrows are equal*

1

[8]