

1

moment = 252

1

allow 252 with no working shown for 2 marks
allow 25200 with no working shown for 1 mark

(b) the clockwise moment (of child B) decreases

1

making it is less than the anticlockwise moment (of child A)
accept so moments are no longer balanced

1

so child A moves downwards

or

so child B moves upwards

1

[5]

M2. (a) centre of **X** at the centre of the concentric circles
judge by eye that the intention is correct

1

(b) drawn from any corner to the diagonally opposite corner
judge by eye that the intention is correct

or from the mid-point of any side to the mid-point of the opposite side
*if more than one axis of symmetry has been drawn,
accept only if both / all are correct*

1

(c) a turning

accept any unambiguous indication

1

[3]

M3. lever

turning effect

pivot

for 1 mark each

[3]

M4. (a) (i) moment

1

	(ii)	rotation	1	
	(iii)	the girl moves nearer to point P	1	
(b)	(i)	X drawn in the centre of the space enclosed by the tyre <i>judge by eye</i>	1	
	(ii)	below	1	[5]
M5.	(a)	1250 <i>allow 1 mark for correct substitution</i> <i>ie 500×2.5 provided there is no subsequent calculation</i>	2	
	(b)	(i) smaller than	1	
		(ii) force (exerted) further from axis of rotation (than the weight) <i>accept pivot for axis of rotation</i>	1	
	(c)	increase the force (exerted) <i>do not accept increase distance of force from axis of rotation</i>	1	[5]
M6.	(a)	C	1	

(b) moment
accept any unambiguous correct indication 1

(c) bigger than
accept any unambiguous correct indication 1

(d) 120 (Ncm)
*allow 1 mark for correct substitution
ie 12×10* 2

[5]

M7. (a) (i) 75
*allow 1 mark for correct substitution ie 250×0.3
do **not** credit if subsequent step shown
allow 1 mark for an answer 7500* 2

(ii) Nm 1

(b) force is (applied) further from the nut / pivot / axis of rotation
*handle is longer is insufficient
do **not** accept less force needed* 1

moment (on wrench) is larger 1

[5]

M8. (a) 360
*allow 1 mark for correct substitution ie 300×1.2 provided no
subsequent step shown*

- (b) the force is applied further from the axis of rotation
accept pivot / (tree) stump for 'axis of rotation'

1

or

this increases the moment of the force

increases the force on the (tree) stump

1

[4]

- M9.** (a) centre of X drawn at centre of pendulum bob
judged by eye
accept dot drawn at centre of circle

1

(b) (i) 2

allow 1 mark for correct substitution, ie $\frac{1}{0.5}$ provided no subsequent step shown

2

(ii) 30 or $60 \div$ their (b)(i) correctly calculated

allow 1 mark for $\frac{60}{2}$

or $\frac{60}{\text{their (b)(i)}}$

or 0.5×60

provided no subsequent step shown

2

(c) 51.2

allow 1 mark for correct substitution, ie 64×0.8 provided no subsequent step shown

2

(d) it increases (the moment)

must be comparative

accept 1 mark for calculation of the moment = 64 (Nm)

1

[8]

M10. (a) 3000

allow 1 mark for correct substitution, ie 600×5 provided no subsequent step

2

(b) anticlockwise moment
must be both words 1

(c) (i) 3400
allow 3.4 kilo (newtons) 1

(ii) as the distance (of the girl from point A) increases, force F increases
allow gets bigger for increases
force is (directly) proportional to distance will negate any correct response 1

[5]

M11. (a) make the rod longer 1

push down on the rod with a greater force

1

(b) particles are close together

1

so no room for more movement

dependent on 1st marking point

1

(c) (i) downward force produces pressure in liquid

reference to compression of liquid negates this mark

1

this pressure is the same at all points in a liquid

or

this pressure is transmitted equally through the liquid

and $P = F / A$ or $F = P \times A$

1

area (at load) bigger (so force bigger)

1

(ii) the force acting on the car moves less distance than the effort force

1

[9]