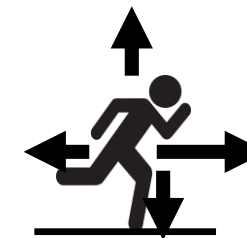
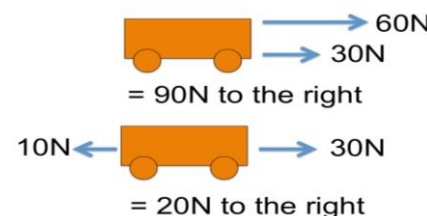


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Vectors	<i>Pairs of arrows are used</i>	Length or arrow shows magnitude, direction of arrow shows the direction of the force
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HIGHER ONLY

Vector diagrams

EDEXCEL TOPIC 9 - FORCES AND THEIR EFFECTS

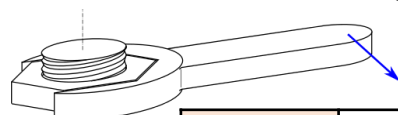
Rotational forces

PHYSICS HIGHER ONLY

Objects affecting each other



The sum of clockwise moments = The sum of anti-clockwise moments .



Principle of moments

Rotational forces are in equilibrium

Moment

A turning effect of a force

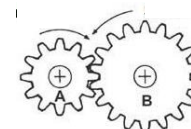
When a force causes an object to rotate. EG: Spanner on a nut.

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Lubrication	<i>Using a liquid to reduce friction between moving parts</i>	Reduces unwanted thermal energy transfer.
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Gears	<i>Two interlocking round circles with 'teeth'</i>	Gear A moves and affects gear B by interlocking the teeth and passing on the rotation motion.
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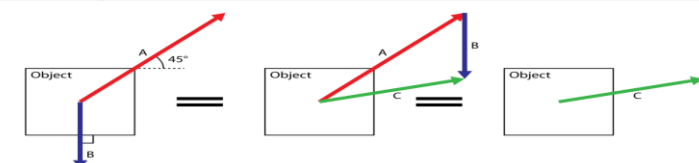


Gear A has 12 teeth and gear B has 18 teeth.

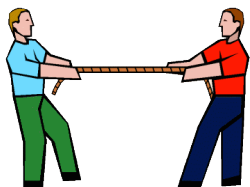
The wheel with more teeth turns slower but the moment of the turning force will be bigger.

Ratio of moments = ratio of teeth = ratio of radii.

Resolving forces	<i>Not all forces act horizontally or vertically</i>	If make the 'awkward' angle easier to work with, split it into two components - drawn at right angles the two forces act together to have the same effect as the single force.
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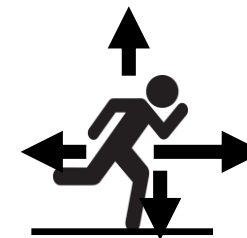


Lever	<i>A bar pivots about a point and transfer a force.</i>	Using a long lever the force applied by a man at one end can be multiplied at the load end to lift a large force.
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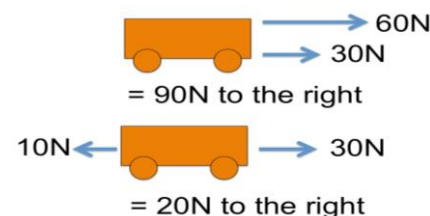


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HIGHER ONLY

Vector diagrams

EDEXCEL TOPIC 9 - FORCES AND THEIR EFFECTS

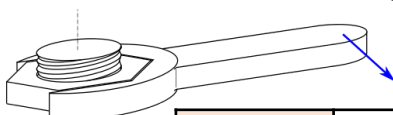
Rotational forces

PHYSICS HIGHER ONLY

Objects affecting each other



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Principle of moments

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Moment

A turning effect of a force

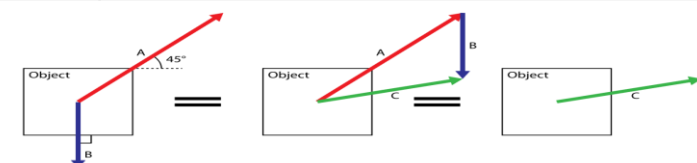
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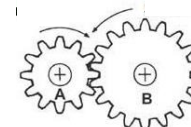
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Lever	<i>A bar pivots about a point and transfer a force.</i>	Using a long lever the force applied by a man at one end can be multiplied at the load end to lift a large force.
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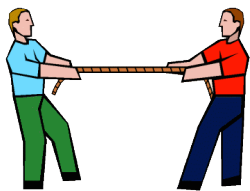
Gears	<i>Two interlocking round circles with 'teeth'</i>	Gear A moves and affects gear B by interlocking the teeth and passing on the rotation motion.
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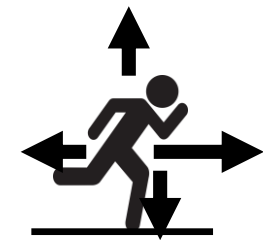
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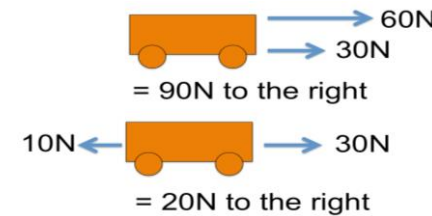


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HIGHER ONLY

Vector diagrams

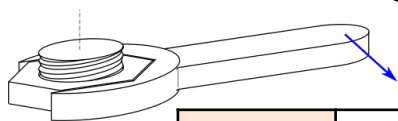
EDEXCEL TOPIC 9 - FORCES AND THEIR EFFECTS

Rotational forces

PHYSICS HIGHER ONLY

Objects affecting each other

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Principle of moments

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Moment

A turning effect of a force

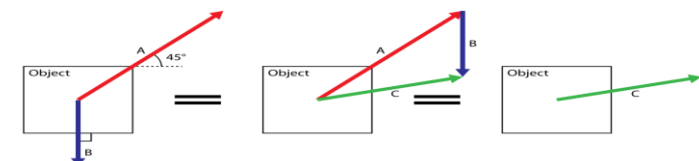
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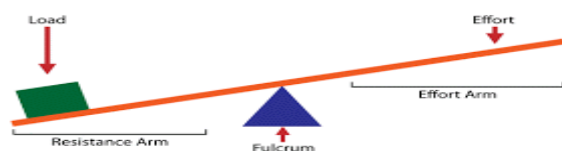
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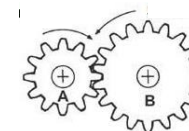
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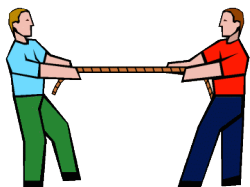
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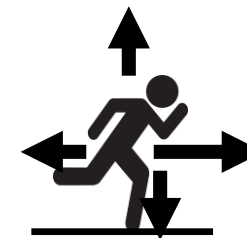
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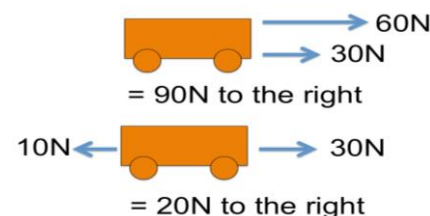


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HIGHER ONLY

Vector diagrams

EDEXCEL TOPIC 9 - FORCES AND THEIR EFFECTS

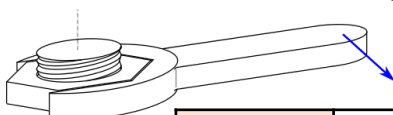
Rotational forces

PHYSICS HIGHER ONLY

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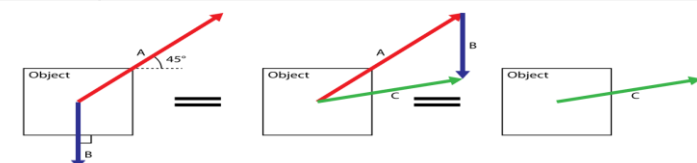
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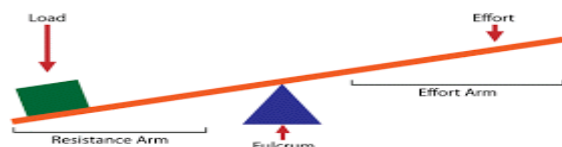
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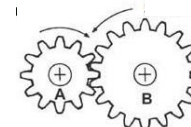
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