

## P3 Making Thing Work Answers

1. A plumb line always hangs so that it is....?

Vertical

2. How can you make an object more stable?

Lower the centre of mass and give it a wide base.

3. Use the terms 'line of action of the weight' and 'resultant moment' to explain why a stable concrete mixer does not fall over when it is given a small push.

The line of action falls inside the base and resultant moment will return the mixer to the original position.

4. What is the unit for time period?

Second

5. How does using a shorter piece of rope for a swing change the time period?

Decreases the time period

6. Where is the centre of mass of a tyre?

In the centre of the tyre because this is where the axes of symmetry cross.

7. What goes in the gap: A suspended object will come to rest with its centre of mass directly.....the point of suspension.

Below

8. What is meant by the centre of mass of an object?

The point at which the mass seems to act/ point at which gravity seems to act.

9. When packing a suitcase, why should you put the heaviest items at the end where the wheels are?

It lowers the centre of mass so the suitcase is more stable when pulled; the turning effect is less so the pull on your arms is less.

10. What is the meaning of the term moment?

Turning force

11. What does the term stable mean in physics?

The centre of mass remains above the base.

12. Explain why using a longer steel bar would make it easier for a gardener to lever a tree stump out of the ground.

The force is applied further from the pivot which causes an increased moment to act on the steel bar and therefore an increased force acts on the tree stump.

13. Give two ways in which you can increase the turning effect of a spanner.

Lengthen the spanner or apply a bigger force.

14. Explain why there are large concrete blocks at the end of a crane behind the operator's cabin.

The mass of the concrete blocks can be altered depending on the mass of the object lifted so that the crane remains stable and the total clockwise moment = total anticlockwise moment and the centre of mass of the crane remains above the base.

15. Why can liquids be used to transmit the forces in a brake system?

Because they are incompressible.

16. In a hydraulic brake, the pressure in the liquid is transmitted in which direction?

In all directions

17. What unit is usually used when calculating pressure?

Pa (Pascal)

18. If a rider applies a larger force to the brake lever, how would this increase in force affect the pressure in the brake fluid?

It increases

19. A hydraulic jack is an example of what?

A force multiplier

20. Explain how the wheel of the London eye can move at a steady speed and the capsules accelerate at the same time.

Acceleration occurs when the direction changes. As velocity has direction, acceleration, which is the rate of change in velocity, changes.

21. What is the name of the resultant force that causes the capsules of the London eye to accelerate as the wheel moves at a steady speed?

Centripetal force