

Task Booklet
Year 7 Science



Forces and

Light



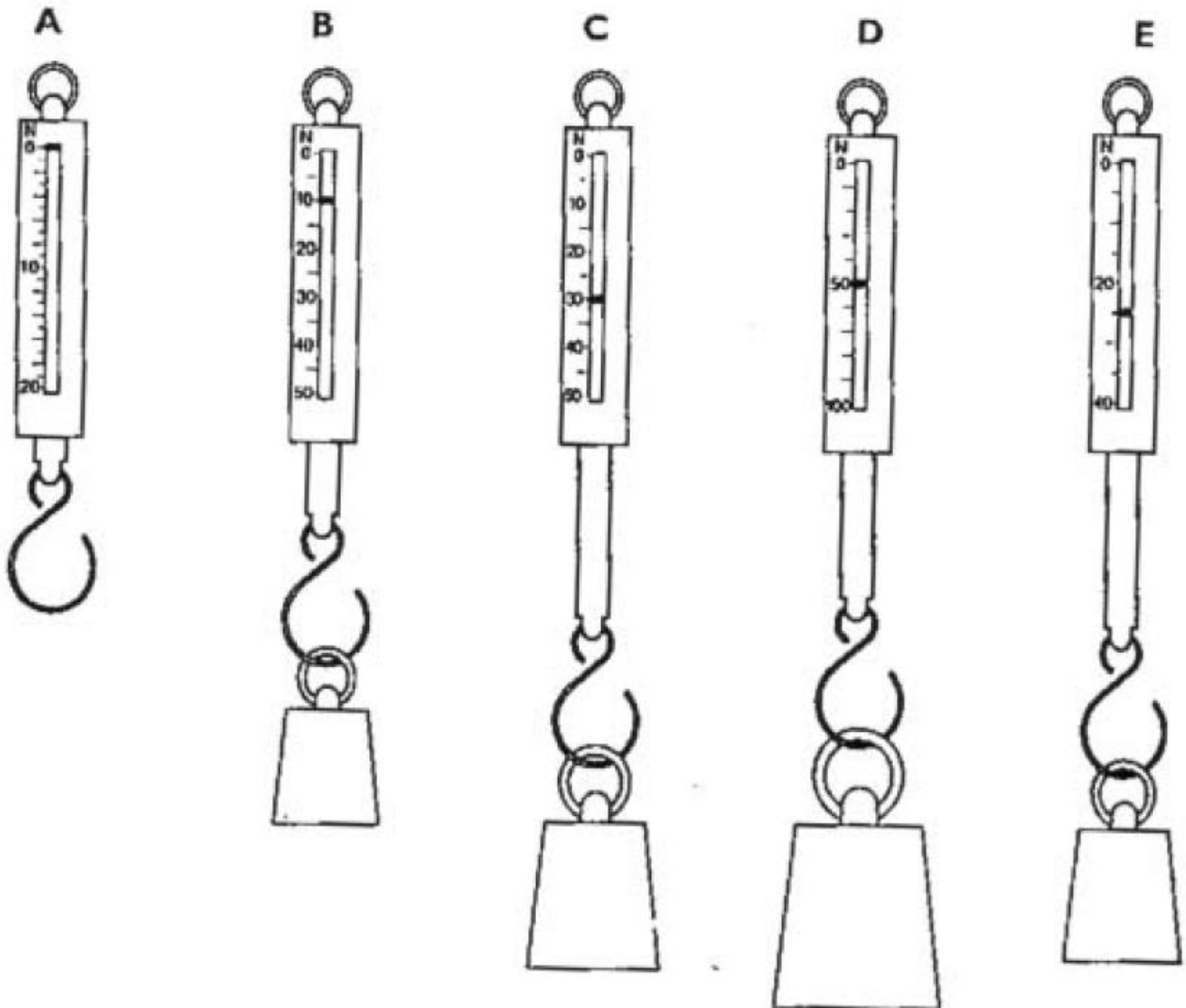
Student Name:

Science Teacher:

Core

Measuring Forces

1. Write down the readings shown on each newtonmeter.



A = _____ N

D = _____ N

B = _____ N

E = _____ N

C = _____ N

2. Underline the correct words in the sentences below:

- a force must have a (name / direction)
- a force must have a (size / shape)
- a force must act (on / near) an object
- forces are shown using (pointers / arrows)
- gravity is the force that (repels / attracts) objects to the Earth

Standard

3. The pictures all show forces in action. Complete the sentences and put in an arrow that shows the direction of the overall force.

(a) *Gravity is pulling the diver*

_____.



(b) *The burning
chemicals are pushing
the firework*

_____.



(c) *The person is pushing the swing to
the*

_____.

Core

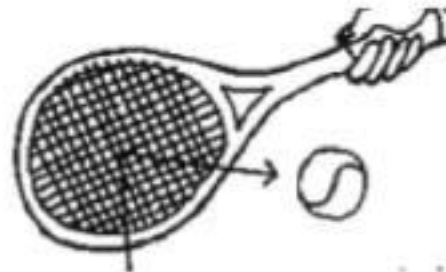
Forces and their Effects

1. Complete the sentences about the pictures using the words in the box to help.

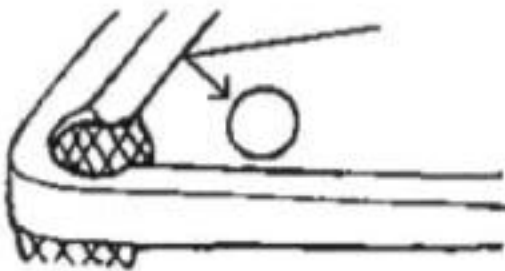
speed *direction* *shape*



(a) The force has changed the _____ of the object



(b) The force has changed the _____ of the object



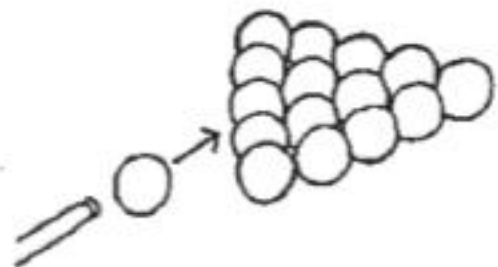
(c) The force has changed the _____ of the object



(d) The force has changed the _____ of the object



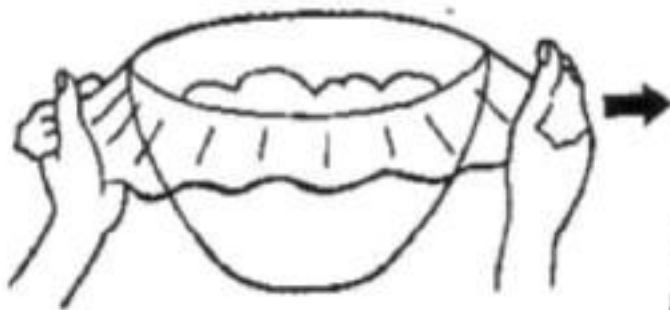
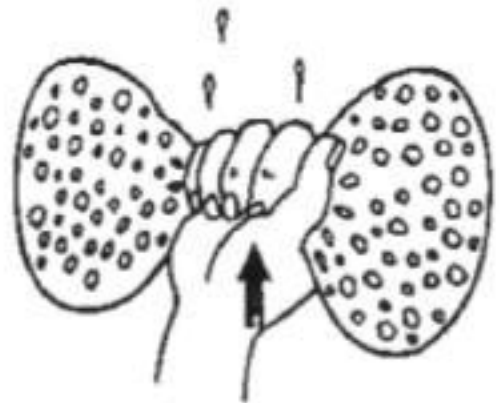
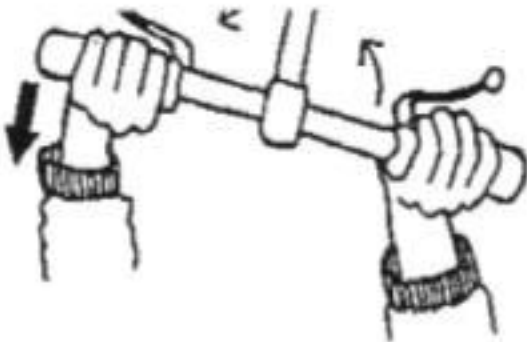
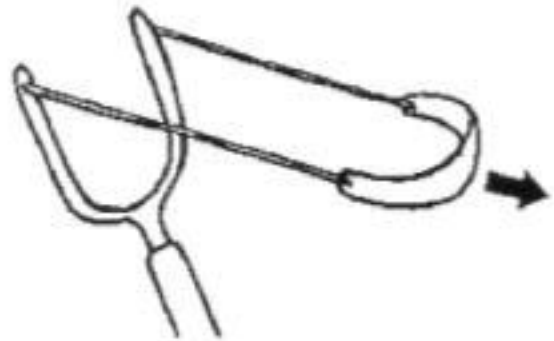
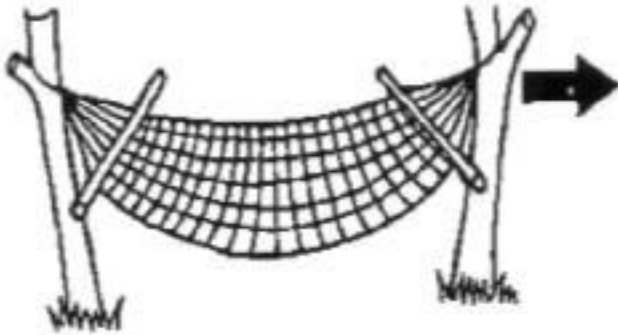
(e) The force has changed the _____ of the object



(f) The force has changed the _____ of the object

Standard

2. Add an extra arrow to the diagrams below to show the forces acting. Remember - forces acting in two directions can change the shape of an object.



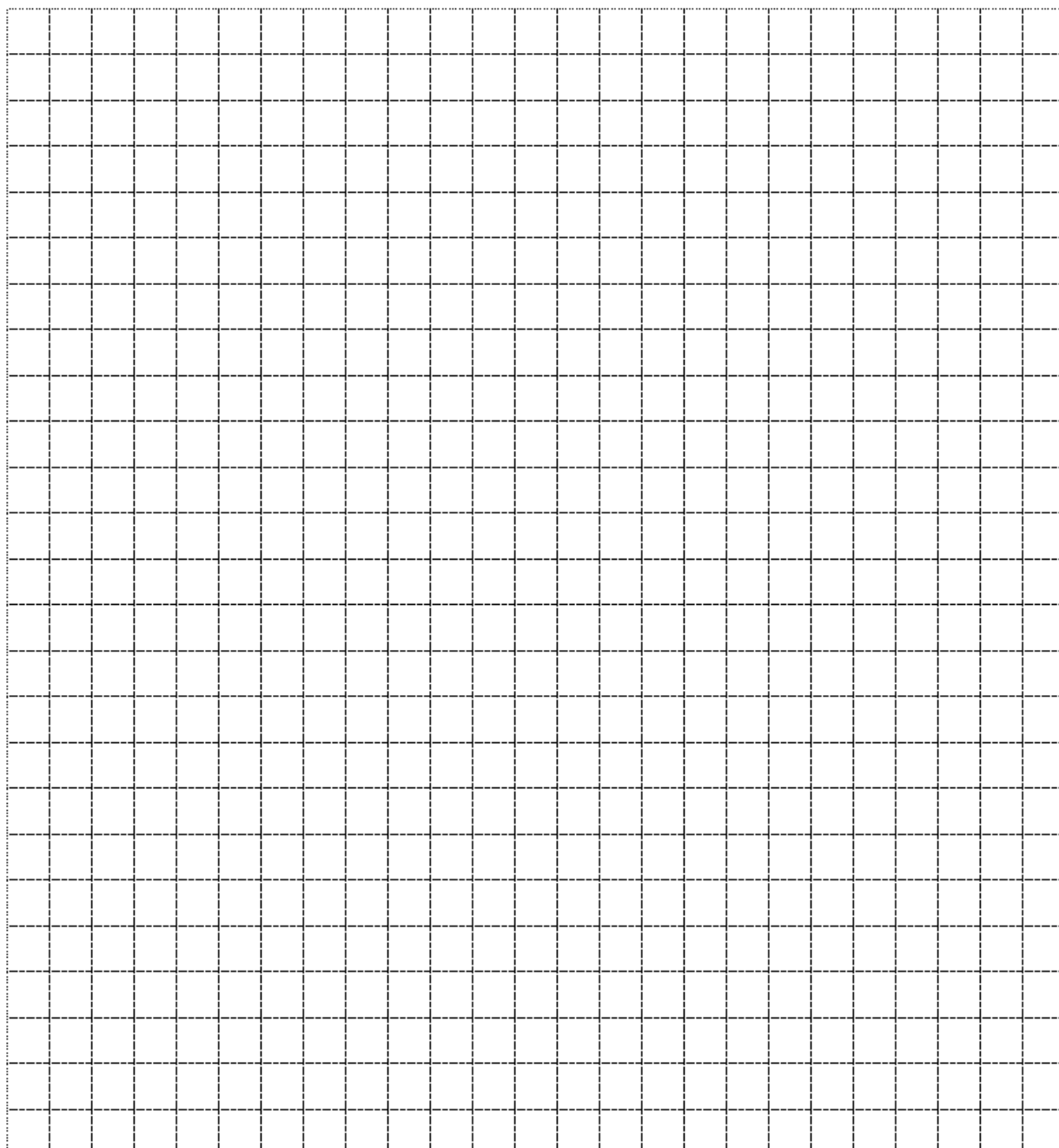
Standard

Stretching Forces

1. The table below shows the results of an experiment where a spring was loaded by applying a weight to it.

<i>Force (N)</i>	0	1	2	3	4	5	6	7	8	9	10
<i>Extension (cm)</i>	0	2	4	6	8	10	12	14	16	18	20

Plot a graph of these results on the grid below:



Extension

2. What is the extension of the spring when a force of 5.5N is applied?

3. What is the extension of the spring when a force of 3.5N is applied?

4. What force needs to be applied to get an extension of 15.5cm?

5. What would happen to the shape of the graph if even more force were to be applied to the spring?

How Light Travels

Core

1. The objects below all have something to do with light.
Circle the ones that are light sources.

a star *the moon*
a mirror *white paper*

a laser *a candle*

2. The sentences below are in the wrong order. Rearrange them so that they are in the right order. Write the letters of the sentences to show this order.

- A This is because light travels much more quickly than sound*
 - B Some time later you hear the thunder*
 - C Lightning strikes a distant hill*
 - D You see the lightning first*
- _____

3. Light travels very quickly but it still takes time to travel.
Match the distances to the times below by drawing a line between them.

Distance travelled by light

Time taken

across a room

eight minutes

to the moon

almost instantly

from the sun

just over a second

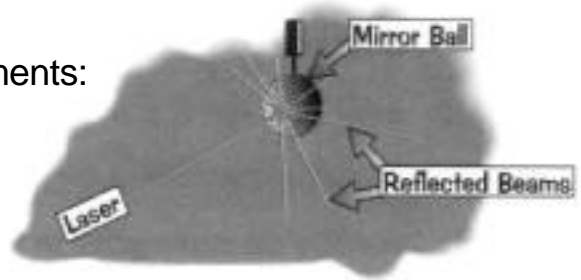
from a distant star

many years

Forces and Light
Standard

Task 4

4. Write true or false for each of these statements:



- (a) The mirror ball makes its own light
- (b) The smoke shows you the path of the laser beam
- (c) The laser could change direction in mid air
- (d) The laser travels in a straight line until it hits the mirror ball
- (e) The laser only changes direction at the mirror
- (f) The reflected laser beams are strong enough to blind a dancer

5. (a) Lisa was outside of town. She saw the flash of a firework rocket exploding and heard the bang. Which sentence is true? (Tick the correct box).

She heard the bang first

She saw the flash first

She heard the bang and saw the flash at the same time

(b) Give the reason for your answer.

6. Use the words in the box to complete the following passage:

straight speed natural sun greater reflected artificial

Outside during the day we mostly see light from the _____ which is a source of light. At night we need to use sources of light like electric lamps. Light from all sources is _____ off the things we see. Light travels in _____ lines and at great _____, _____ much _____ than sound.

What Happens When Light Meets an Object?

Core

1. Use the key words in the box to complete the sentences:

transparent translucent opaque absorb reflect transmit

- (a) A mirror will _____ light that hits it.
- (b) An _____ material will stop light altogether.
- (c) Black paint will _____ almost all of the light that lands on it.
- (d) A _____ material will allow light to pass through it easily.
- (e) A _____ material will allow light through it, but scatters it about _____ so you can't see anything.
- (f) A dirty mirror will _____ some light but it will also _____ some, making your face look dull.
- (g) The windows in a car are _____ so that they _____ light.

Standard

2. Look at the list of materials below. Write transparent, translucent or opaque next to each material to show how the material behaves when light is shone on to it.

- | | |
|---------------|-----------------|
| brick | glass |
| cloud | fog |
| air | scratched glass |
| lead | wood |
| steel | water |
| tracing paper | |

Forces and Light

Task 5

Standard

3. Write true or false next to the statements below:

Luminous objects need a light source to be seen

The moon makes its own light

Dark objects reflect less light than bright ones

Light goes out of your eyes so you can see things

In daylight the Sun is the original source of light that you see things with

A ray is the name given to the path that light follows

Pitch and Loudness

Core

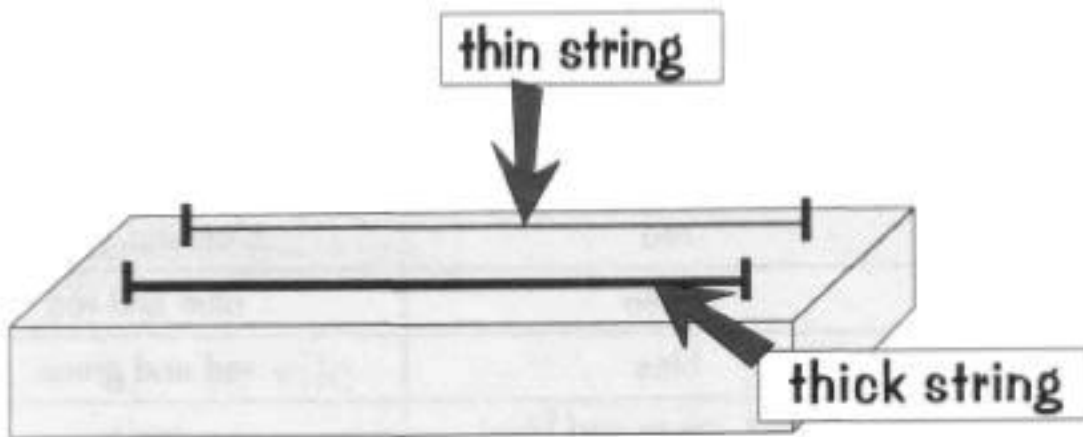
1. Use the words in the box below to fill in the gaps in the sentences below.

quiet high low loud vibrating pitch volume

- (a) Sounds are produced when objects are _____.
- (b) The _____ of the sound from a bass guitar is usually _____.
- (c) The _____ of the sound from a whistle is usually _____.
- (d) A jet engine is _____ because its _____ is high.
- (e) A whisper is _____ because its _____ is low.

Standard

2. A guitar can make different musical notes. The sentences below the diagram are muddled up. Match the start of each sentence with the correct ending by drawing lines from one to the other.



- | | |
|--------------------------------|----------------------|
| (a) Using a thicker string... | .gives a higher note |
| (b) Tightening the string... | .gives a louder note |
| (c) Making the string shorter. | .gives a lower note |
| (d) Making a bigger vibration. | .gives a higher note |

continued ->

Standard

3. Ahmed is at a disco. He is listening to the music and he decides to move closer to the speakers.

(a) Describe what a speaker is doing to produce a sound.

(b) Describe how the loudness of the sound that Ahmed hears changes as he moves nearer to the speaker.

(c) Describe how the pitch of the sound that Ahmed hears changes as he moves nearer to the speaker.

4. Use the words in the box to complete the passage below.

**eardrums solids liquids loud wave amplitude
vibration frequency vacuum less high tightening
shorter**

*'The movement of sound can be described as a
and all sounds are produced by some sort of __
Sound cannot travel through a _____ but it can travel
through gases, _____ and _____. A high
_____ of vibration makes a _____ pitched
sound and a large _____ produces a _____
sound. Sound waves travel _____ quickly than light. We
hear sounds when our _____ vibrate. The pitch of a guitar
string can be raised by _____ the string and
_____ organ pipes tend to produce the highest
frequencies.'*