The National Orthodox School/ Shmessani

Text Book

8.1 Pressure

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Force	Area	Pressure
150 N	25 cm^2	6 N/cm^2
60 N	15 m^2	4 N/m^2
5 N	0.1 cm^2	50 N/cm^2

2 3 N

3 30 cm^2

4 Each foot is 0.04 m^2

8.8 Density

1 Water curves upwards at the edges, you can only see the meniscus if you look straight at the scale.

2a air, petrol, ice, water, flour, silver, lead, gold

b Ice – most solids are more dense than the same material in a liquid or gas state.

3a Material A = 30 g / 2 cm^3 = 15 g/cm^3

b Material B = 8 g / 10 cm^3 = 0.8 g/cm^3

c Material B because liquids are usually is less dense.

4 Bigger.

8.9 Explaining density

1 Iron is a solid but oxygen is a gas at room temperature, so there are more particles of iron in the same volume than of iron making it more dense. Also the individual particles of iron have more mass than those of oxygen.

2 Pumice is less dense than water, but ironwood is more dense than water. Pumice is less dense because it is a volcanic rock with lots of air pockets inside.

3 The particle arrangements in both metals will be similar, so the density is more likely to be a result of different particle masses.

4a Sink in mercury and water.

b Float in mercury, sink in water.

c Float in mercury and water.

8.11 Levers

1 Correct words in order: bigger, smaller

2a C

b A

c B

3 We use tongs in a chemistry lab so that we do not get burned holding test tubes or beakers over Bunsen burners.

8.15 Review

6a $10\ cm \times 20\ cm \times 6\ cm = 100\ cm^3$

b Density = $240\ g / 100\ cm^3 = 2.4\ g/cm^3$

7a False

b True

c True

d True

12a Moment = 10 N × 2 m = 10 Nm

b Moment = 2 N × 0.4 m = 0.8 Nm

c Moment = 0.1 N × 0.2 m = 0.02 Nm

13a It will go down at the end where Maria is sitting.

b He should sit halfway between the pivot and the end of the see-saw.

c No, Jamal weighs less than Ryan so he would need to be sitting further away from the pivot to balance the see-saw. This is not possible if Ryan sits at the end of the see-saw.

Workbook

8.1 Pressure

1 Missing words in order: force, area, bigger, smaller, force divided by area, pascals.

2a 50 N/5 m^2 = 10 N/m^2

b 100 N/5 m^2 = 20 N/m^2

c 300 N/0.5 m^2 = 600 N/m^2

3a 10 N/cm^2 – when it is stood on the end with the smallest area 5 cm × 2 cm.

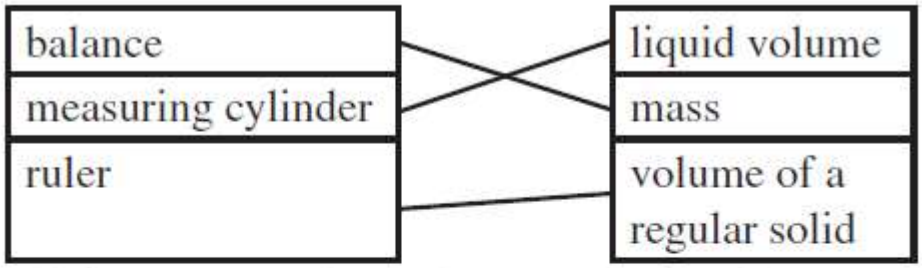
b 0.4 N/cm^2 – when it is stood on the end with the largest area 10 cm × 5cm.

Extension:

Force (N)	Area	Pressure
20	4 cm^2	**5 N/cm^2**
60	**40 m^2**	1.5 N/m^2
0.6	12 m^2	0.05 N/m^2
75	5 m^2	15 N/m^2

8.8 Density

1a



b It is important to be at the same level as the meniscus when measuring a liquid.

2 Correct answers in order: 0.17 kg/m^3, 2.20 g/cm^3, 2.65 g/cm^3, 1.40 kg/m^3.

3a B, A, E, F, C, D

b You could measure the mass of the object before or after measuring the volume.

c A, E, F, C, B, D

8.9 Explaining density

1 Missing words in order: bigger, are not, smaller, are.

3a F

b F

c F

d T

e F

8.11 Turning forces

1 Missing words in order: machine, multiplier, pivot, effort, load, pivot, effort, pivot, load

2a A turning force is the movement of the force applied to the lever.

b Centre of the nut.

c A

d C

e You would need to apply more force to turn the handle.

3a Point where the screwdriver rests on the outer edge of the tin.

b Pivot to the point the screwdriver contacts the lid.

c Pivot to the hand.

d The distance from the effort to the pivot is much greater than from the pivot to the load, so you only need to apply a small effort for a big output force.