



Grade 8 Lab Notebook

Science in Action 8

Index of Investigations, Challenges and Activities

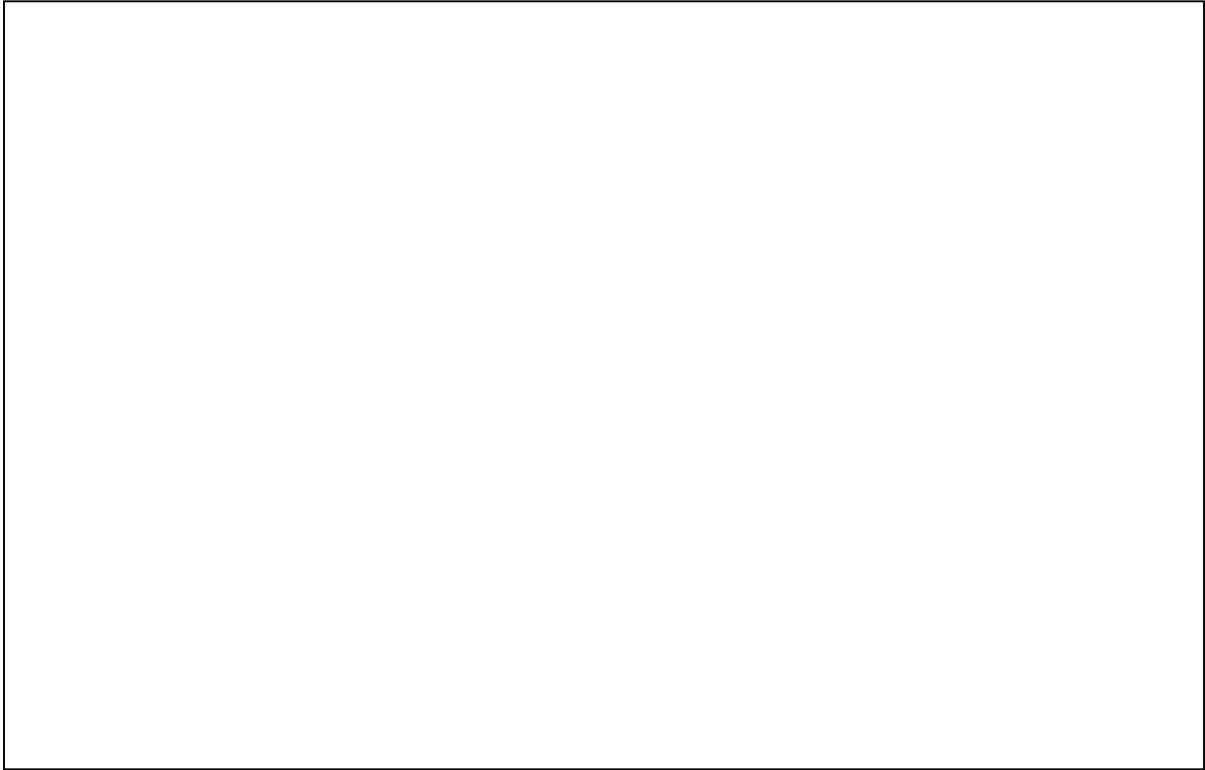
Mix and Flow of Matter

Investigations	Activity	Title	Page Ref.
Give It A Try		The New Drink	6
1.0 Fluids are used in technological devices and everyday materials.			
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2.0 The properties of mixtures and fluids can be explained by the particle model of matter.			
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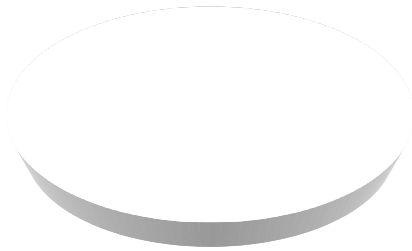
The New Drink (p. 6)

Can a piece of fruit be suspended in a liquid?

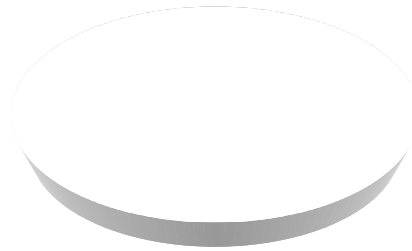
(Create a *web page image* that describes and promotes this new drink)



Another Property of Fluids (p. 15)



Water with pepper



Detergent added

Observations

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<hr/>	<hr/>
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Inquiry A-1

Paper Chromatography (p. 22)

Question: Is felt marker ink a pure substance or a mixture?

Hypothesis: _____

Materials and Procedure: (p. 22)

Data Collection:

Prediction

Observation

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Analysis and Interpretation:

9. _____

Forming Conclusions:

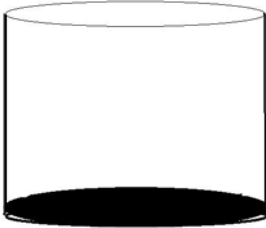
10. _____

Application (Connection):

Comparing Solutions (p. 24)

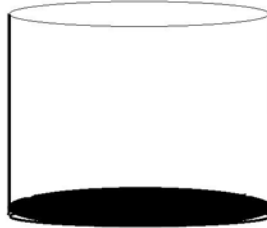
A

10 g (crystals) in 50 ml (water)



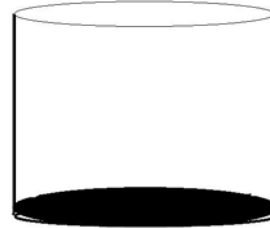
B

15 g (crystals) in 100 ml (water)



C

6 g (crystals) in 25 ml (water)

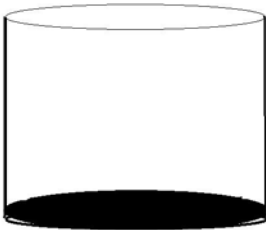


Calculate the concentration of each drink

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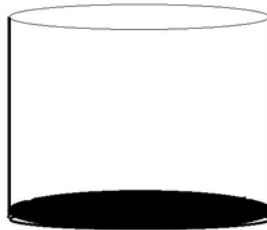
D

20 g (crystals) in 100 ml (water)



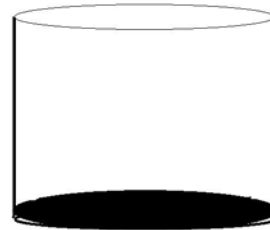
E

75 g (crystals) in 250 ml (water)



F

10 g (crystals) in 45 ml (water)



Calculate the concentration of each drink

--	--	--

The most concentrated drink was _____ because _____

Inquiry A-2

Saturated and Unsaturated Solutions (p. 26-27)

Question: How can you make saturated solutions?

Hypothesis: _____

Materials and Procedure: (p. 26-27)

Data Collection:

Substance	Mass Added	Volume of Water	Concentration in g/100 ml Water	Observations

Analyzing and Interpreting:

8. Calculation of concentration (results in table)

9. _____

Forming Conclusions:

10. _____

Applying and Connecting: (p.27)

Dissolving Solutes in Different Solvents (p. 29)

Materials:

Juice Crystals, Petroleum Jelly, Sugar, Salt

Procedure:

Results:

Substance	Soluble in Water	Soluble in Vegetable oil
Juice Crystals	Yes No	Yes No
Petroleum Jelly	Yes No	Yes No
Sugar	Yes No	Yes No
Salt	Yes No	Yes No

Inquiry A-3

Temperature and Solubility (p. 30)

Question: What effect does temperature have on the solubility of a substance?

Hypothesis: _____

Materials (p. 30)

Variables to be investigated:

Manipulated - _____

Responding - _____

Controlled - _____

Procedure:

Data Collection:

Solute	Solvent	Amount of solute added to solvent @ 0°C (Freezing)	Amount of solute added to solvent @ 20°C (Room Temperature)	Amount of solute added to solvent @ 90°C (Boiling)

Analyzing and Interpreting:

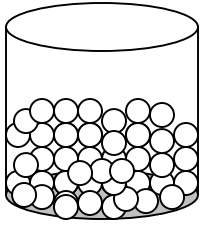
6. (results in table)

Forming Conclusions:

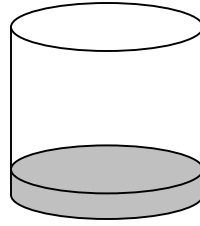
7. _____

Extending: (p.30)

Using The Particle Model of Matter (p. 34)

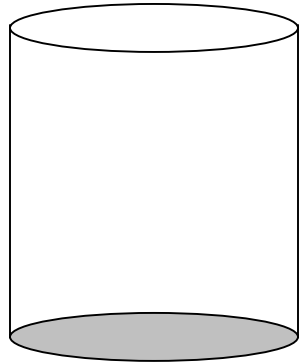


250 ml of marbles



50 ml of sand

Illustrate what happens when the sand and marbles are mixed



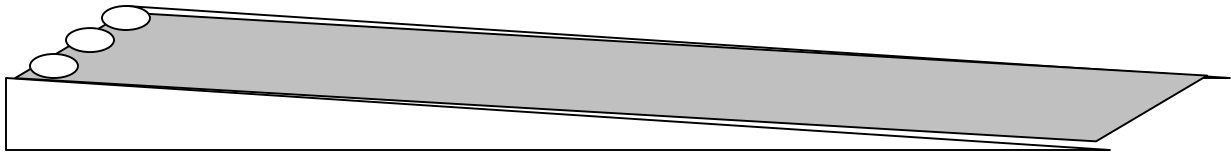
Using the particle model, explain your observations –

Sand and Marbles _____

Alcohol and Water _____

How Fast Can It Go? (p. 40)

Use the ramp test



Procedure:

Summary of Results: (On a separate sheet)

Dense and Denser (p. 42)

Substance	Density
	Most Dense
	Least Dense

What method did you use? _____

Inquiry A-4

Calculating Mass / Volume Ratio (p. 44)

Question: How can you calculate the density of a variety of solids and liquids?

Hypothesis: _____

Materials and Procedure: (p. 44-45)

Data Collection:

Substance	Volume of Substance (mL)	Mass of Beaker (g)	Mass of Beaker and Substance (g)	Mass of Substance only (g)	Mass/Volume Ratio
water	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				
sand	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				
corn syrup	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				
aquarium stones	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				
shampoo	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				
wood chips	50 mL				
	100 mL				
	150 mL				
	200 mL				
	250 mL				

Analyzing and Interpreting:

8. and 9. (Record data using **Excel**)

10. and 11. (**Line Graph**)

12. Steepest slope _____

Shallowest slope _____

13. (Calculation of **Mass to Volume Ratio** and completed in Data Table)

14. _____

15. Same Difference _____

16. a) _____

b) _____

c) _____

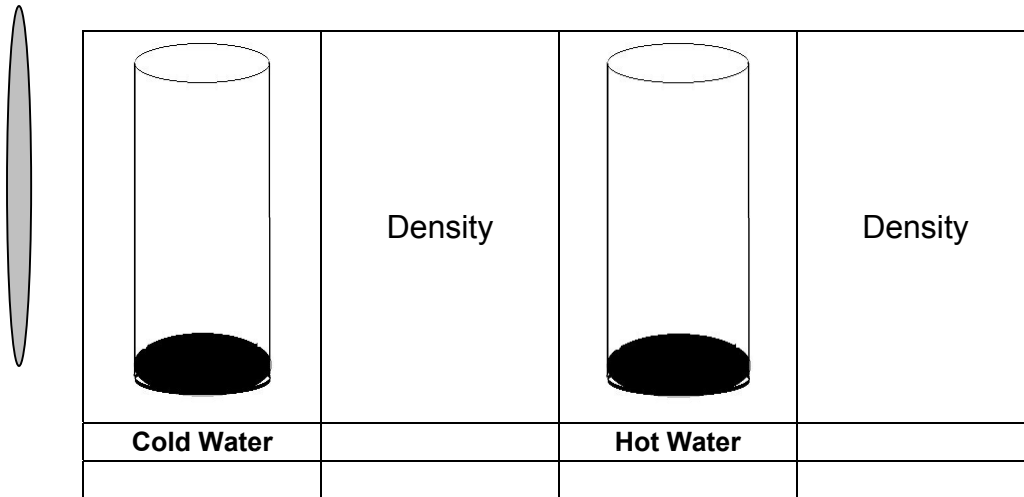
Forming Conclusions:

17. _____

Applying and Connecting (p.45)

Measuring Density Changes (p. 47)

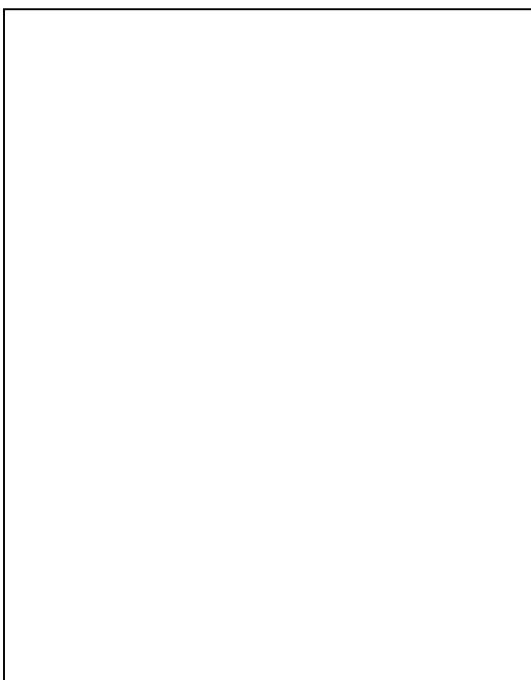
Using a hydrometer



Results: _____

SINK OR SWIM (p. 52)

Illustrate/Explain (*in scientific terms and principles*) how the 'Cartesian Diver' works.



Inquiry A-5

Compressing Fluids (p. 54-55)

Question 1 : What happens to air as it is compressed?

Hypothesis: _____

Question 2 : Does water react in the same way?

Hypothesis: _____

Materials and Procedure: (p. 54-55)

Data Collection (Part 1 and Part 2):

Force acting on Fluid in Syringe (N)	Volume of Air (mL)		Volume of Water (mL)	
	Prediction	Actual	Prediction	Actual
0				
10				
20				
30				
40				

Analyzing and Interpreting:

18. _____

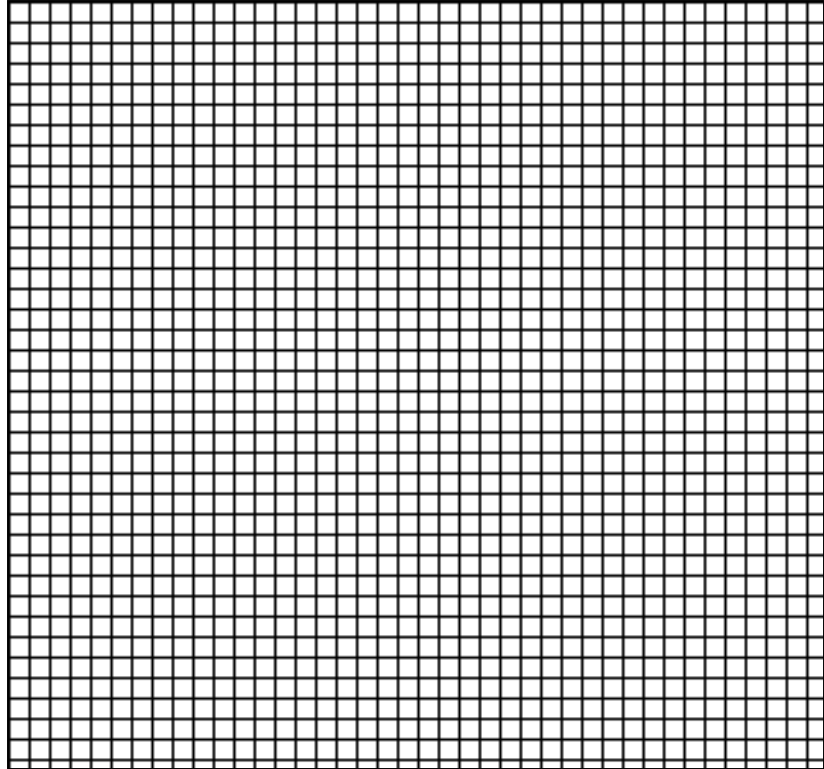
19. _____

20. _____

21. _____

22. Title _____

Volume



Force

Forming Conclusions:

22. _____

Applying and Connecting (p.55)

Inquiry A-6

Cleaning Solvents (p. 54-55)

Question: Which solvent is best for removing stains from clothing?

Hypothesis: _____

Materials and Procedure: (p. 64)

Data Collection:

Stains	Solvents Tested		
	Water	Alcohol	Vinegar
	Observations		
Mud			
Lipstick			
Chocolate			
Ketchup			

Analyzing and Interpreting:

7. _____

8. _____

9. _____

10. _____

Forming Conclusions:

11. _____

Applying and Connecting (p.64)

Extending (p.64)

Inquiry A-7

Diving Deeply (p. 70)

Question: Is it possible for you to create a model '*Bathyscaph*' that could carry a battery-operated video camera to the bottom of a murky lake 5 m deep and return?

Hypothesis: _____

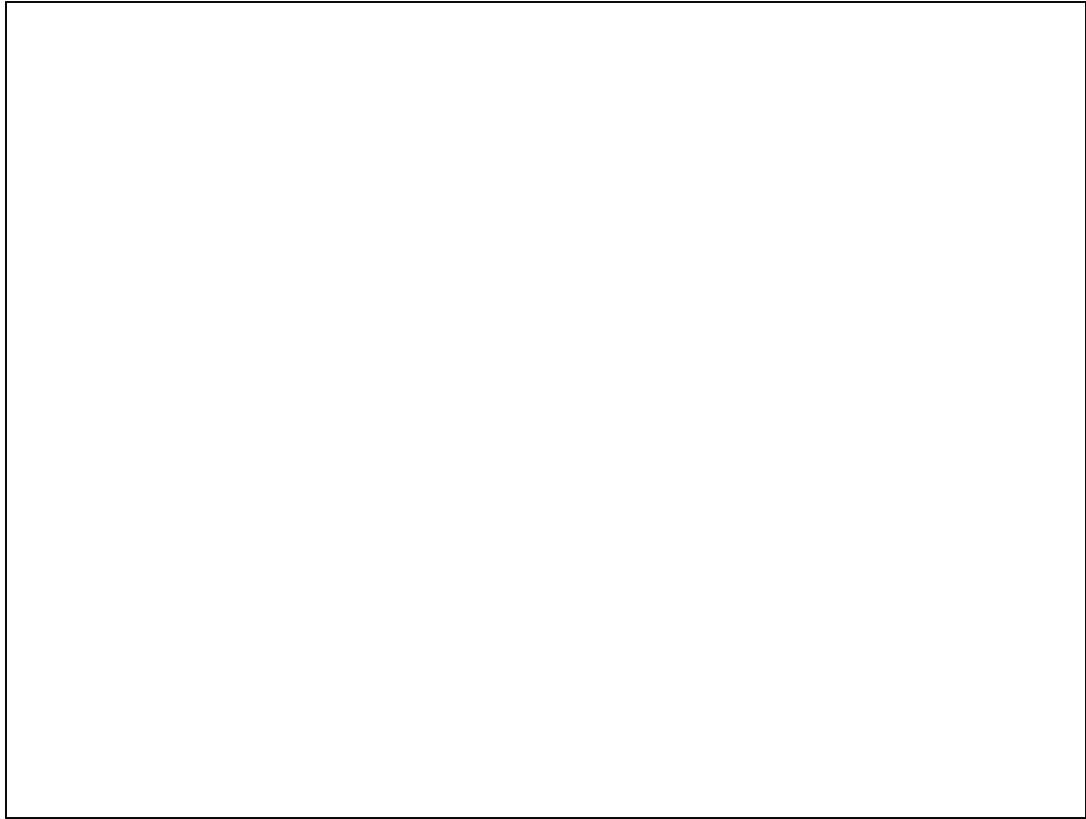
Criteria for success: (p. 70)

Schematic:



Construction Plans:

Prototype Model:



Testing and Evaluation of Model (Modifications Needed)

Communicating (p.64)

5.

6.

Experiment ON YOUR OWN (p. 72)

Design and Build a Hydraulic or Pneumatic Elevator

You have to lift a golf ball a height of **50 cm**

Your elevator must not exceed a height of **60 cm**

You can only use **common household materials** that are readily available.

SKETCH



Self-Evaluation of your Device

The Alberta Oil Sands Deposits