



## Grade 8 Lab Notebook

# Science in Action 8

## Index of Investigations, Challenges and Activities

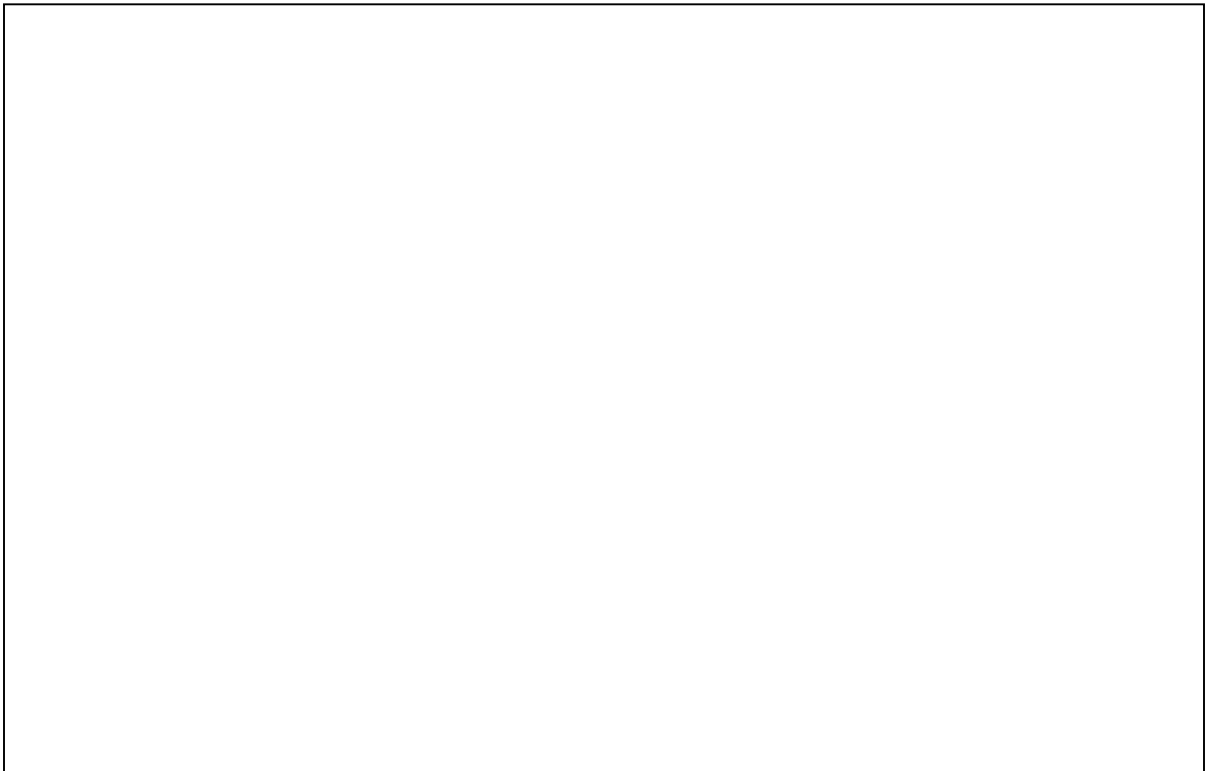
### Mix and Flow of Matter

Investigations	Activity	Title	Page Ref.
Give It A Try		The New Drink	6
<b>1.0 Fluids are used in technological devices and everyday materials.</b>			
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<b>2.0 The properties of mixtures and fluids can be explained by the particle model of matter.</b>			
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<b>3.0 The properties of gases and liquids can be explained by the particle model of matter.</b>			
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<b>4.0 Many technologies are based on the properties of fluids.</b>			
<b>Inquiry</b>	<b>A-6</b>	<b>Cleaning Solvents</b>	64
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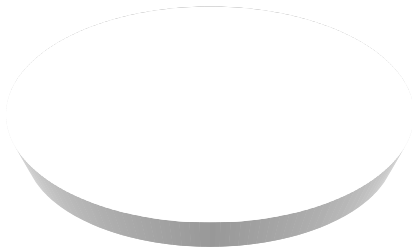
## The New Drink (p. 6)

Can a piece of fruit be suspended in a liquid?

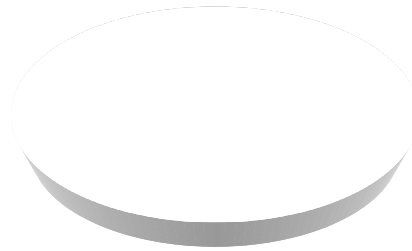
(Create a *web page image* that describes and promotes this new drink)



## Another Property of Fluids (p. 15)



Water with pepper



Detergent added

### Observations

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***Inquiry A-1***

**Paper Chromatography (p. 22)**

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

**Hypothesis:** \_\_\_\_\_

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**Materials and Procedure:** (p. 22)

**Data Collection:**

Prediction

Observation

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**Analysis and Interpretation:**

9. \_\_\_\_\_

**Forming Conclusions:**

10. \_\_\_\_\_

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**Application (Connection):**

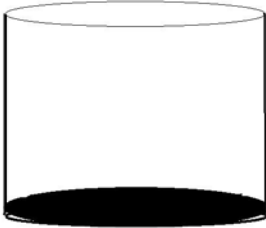
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## Comparing Solutions (p. 24)

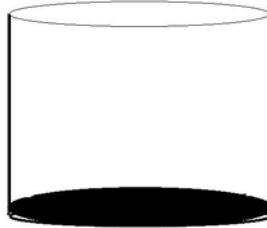
**A**

10 g (crystals) in 50 ml (water)



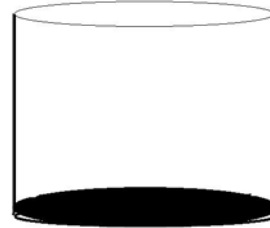
**B**

15 g (crystals) in 100 ml (water)



**C**

6 g (crystals) in 25 ml (water)

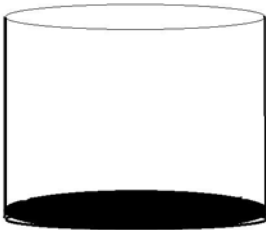


**Calculate the concentration of each drink**

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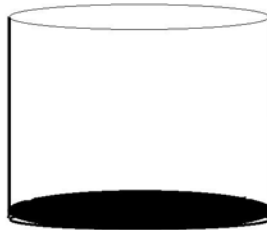
**D**

20 g (crystals) in 100 ml (water)



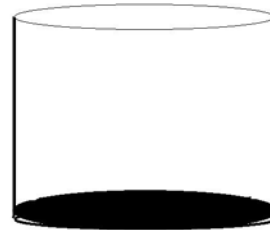
**E**

75 g (crystals) in 250 ml (water)



**F**

10 g (crystals) in 45 ml (water)



**Calculate the concentration of each drink**

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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)



*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:**

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**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)

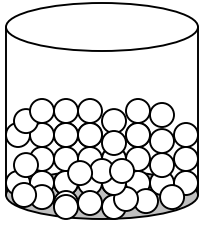
**Forming Conclusions:**

7. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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\_\_\_\_\_  
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\_\_\_\_\_

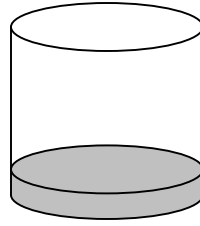
**Extending:** (p.30)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# Using The Particle Model of Matter (p. 34)

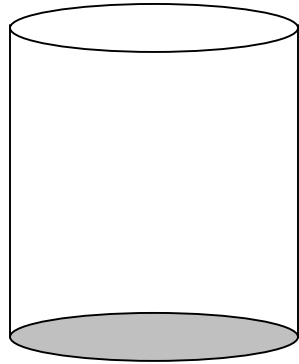


250 ml of marbles



50 ml of sand

Illustrate what happens when the sand and marbles are mixed



Using the particle model, explain your observations –

**Sand and Marbles** \_\_\_\_\_

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**Alcohol and Water** \_\_\_\_\_

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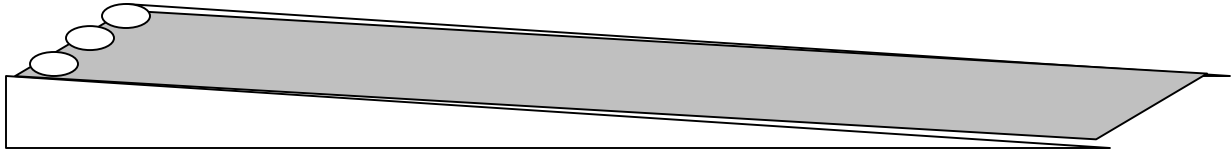
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## How Fast Can It Go? (p. 40)

Use the ramp test



### ***Procedure:***

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***Summary of Results:*** (On a separate sheet)

## Dense and Denser (p. 42)

Substance	Density
	<b>Most Dense</b>
	<b>Least Dense</b>

What method did you use? \_\_\_\_\_

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***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. \_\_\_\_\_

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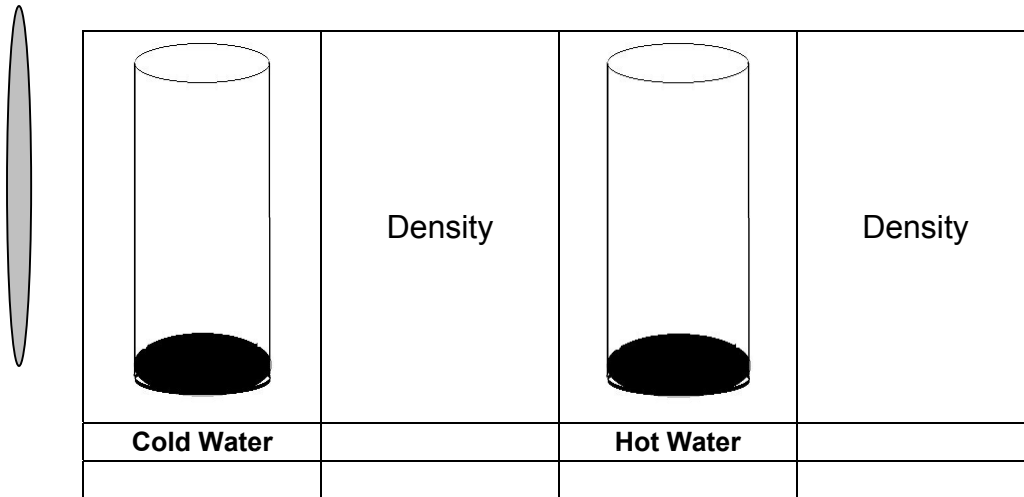
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**Applying and Connecting** (p.45)

# Measuring Density Changes (p. 47)

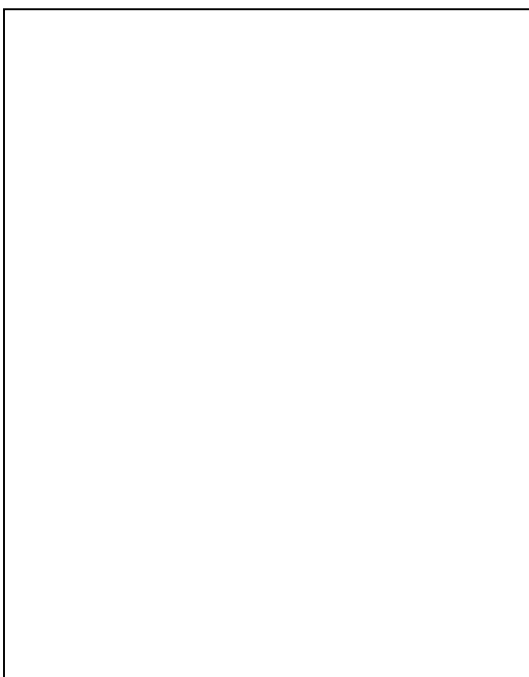
Using a hydrometer



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. \_\_\_\_\_

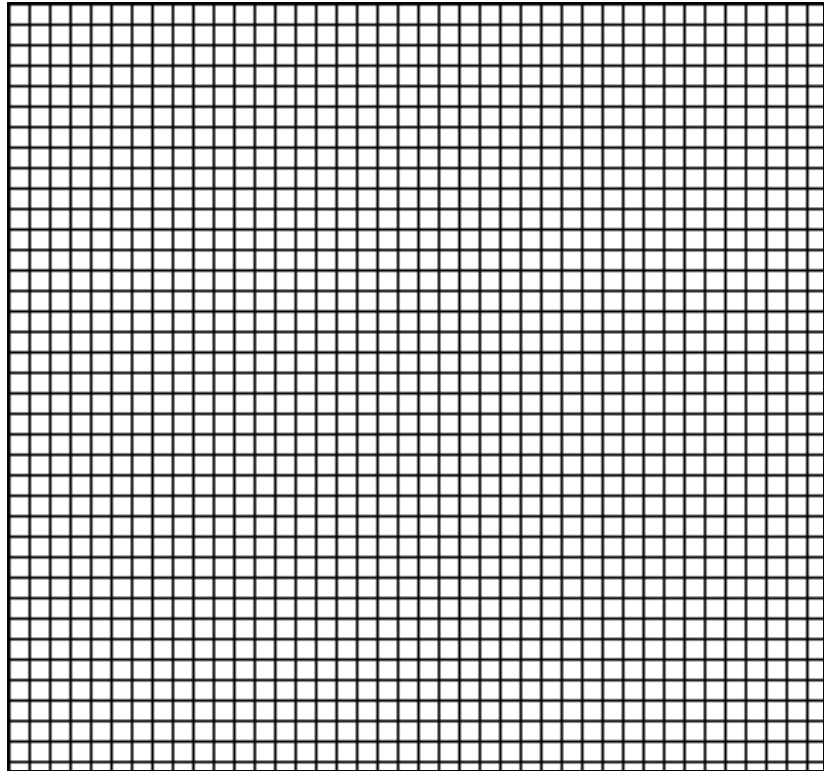
\_\_\_\_\_

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:** \_\_\_\_\_

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**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. \_\_\_\_\_

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**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:**

\_\_\_\_\_

\_\_\_\_\_

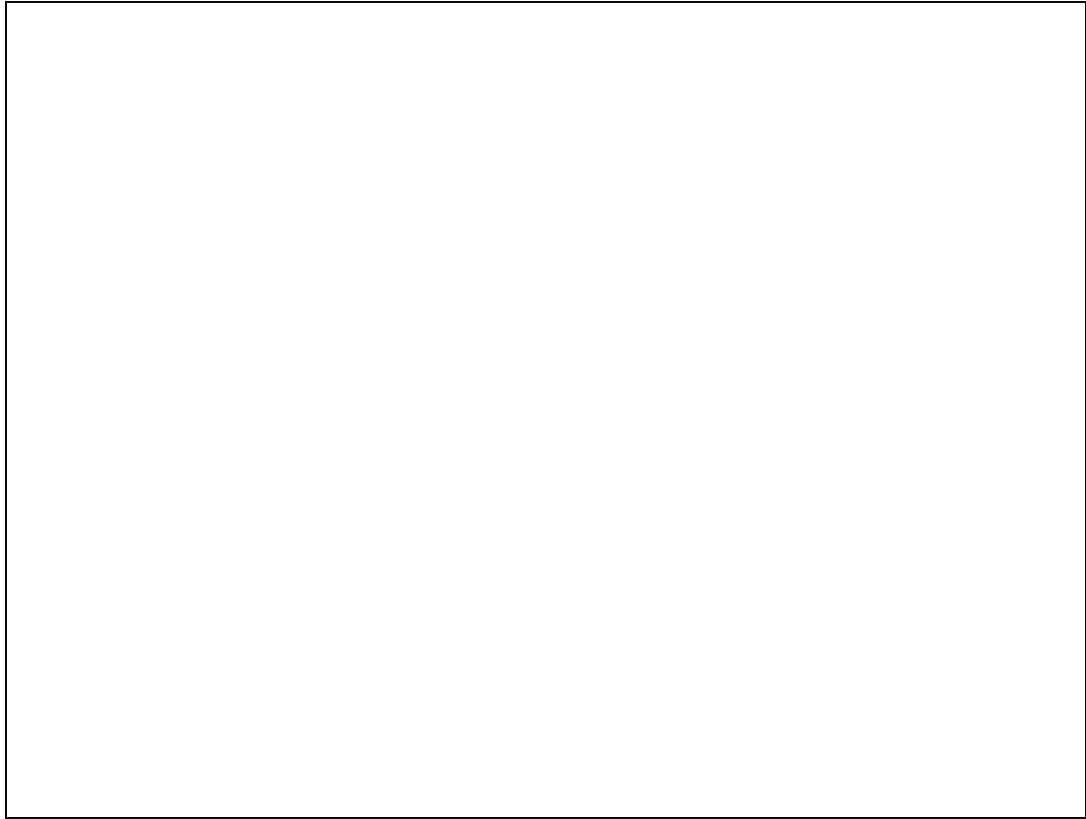
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**Prototype Model:**



**Testing and Evaluation of Model ( Modifications Needed )**

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**Communicating (p.64)**

5. 

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6. 

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## 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*

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## **The Alberta Oil Sands Deposits**