Name: _____ Group: _____ Date: _____

STUDENT BOOK:	**Chapter 3, pp. 69, 83–84**
CONCEPTS:	INCOMPRESSIBLE FLUID
	PRESSURE
METHOD:	EMPIRICAL

BLOOD PRESSURE

Garlic helps lower blood pressure in the arteries. But how exactly do the arteries become clogged? One of the most familiar culprits is a high ratio of fat, including cholesterol, in the blood. An example of this is atherosclerosis, a disease of the circulatory system characterized by the build-up of fat on the artery walls and loss of the arteries' natural elasticity. The demonstration you are about to see will help you visualize the effects of atherosclerosis in an artery.

When the arteries are clogged in this way, a person may develop hypertension, a condition in which the blood exerts too much pressure on the artery walls. We can collect data and produce statistics to discover the population distribution of people with high blood pressure.

IDENTIFYING THE RESEARCH SUBJECT

Read pp. 69, 83–84 in your student book for help in answering the following questions.

1. Is blood a compressible or incompressible fluid? What are the characteristics of this fluid?

_____

_____

_____

_____

_____

2. Which instrument can be used to measure a person's arterial pressure (pressure exerted by blood inside the arteries)?

_____

3. What units are used to measure arterial pressure?

_____

4. Beyond what reading does arterial pressure exceed normal average pressure?

_____

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5. What enables fluids to circulate within the cardiovascular system?

6. Name a factor that may clog the arteries.

7. What are the consequences of clogged arteries?

PLANNING YOUR RESEARCH

8. Carefully examine the table below before answering the questions that follow.

High blood pressure in Canada

	Total	With high blood pressure		Without high blood pressure		Undeclared*	
		No.	%	No.	%	No.	%
12–19 years	**3 353 635**	**16 093**	**0.5**	**3 318 688**	**99.0**	**18 855**	**0.6**
Males	1 716 269	6 072	0.4	1 697 811	98.9	12 387	0.7
Females	1 637 366	10 021	0.6	1 620 877	99.0	6 468	0.4
20–34 years	**6 422 774**	**162 031**	**2.5**	**6 248 499**	**97.3**	**12 245**	**0.2**
Males	3 211 070	98 594	3.1	3 101 389	96.6	11 088	0.3
Females	3 211 704	63 437	2.0	3 147 110	98.0	–	–
35–44 years	**5 087 627**	**333 475**	**6.6**	**4 744 466**	**93.3**	**9 686**	**0.2**
Males	2 573 924	188 927	7.3	2 379 736	92.5	5 261	0.2
Females	2 513 703	144 548	5.8	2 364 730	94.1	–	–
45–64 years	**8 339 620**	**1 808 138**	**21.7**	**6 516 109**	**78.1**	**15 372**	**0.2**
Males	4 122 741	908 424	22.0	3 203 400	77.7	10 916	0.3
Females	4 216 879	899 714	21.3	3 312 709	78.9	4 456	0.1
65 years and over	**3 928 309**	**1 732 879**	**44.1**	**2 185 875**	**55.6**	**9 555**	**0.2**
Males	1 747 908	688 336	39.4	1 055 701	60.4	3 871	0.2
Females	2 180 401	1 044 543	47.9	1 130 174	51.8	5 684	0.3
Total 12 years and over	**27 131 965**	**4 052 616**	**14.9**	**23 013 637**	**84.8**	**65 713**	**0.2**
Males	13 371 912	1 890 353	14.1	11 438 037	85.5	43 523	0.3
Females	13 760 053	2 162 263	15.7	11 575 600	84.1	22 190	0.2

*Undeclared: the blood pressure of these subjects was not taken and it is therefore not known whether they have high blood pressure. These data are merely indicative and provided to arrive at the figure of 100 percent. They are to be disregarded in any analysis of the data.

Source: adapted from the Statistics Canada table *Canadian Community Health Survey (2005)*.

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9. What variables were used to gather the data for this table?

10. What types of results does this table give?

11. What can we study through this statistical table?

CONDUCTING YOUR RESEARCH

12. According to this table, what is the total percentage of Canadians aged 12 years and more who suffer from hypertension?

13. According to this table, which age group has the greatest percentage of hypertension?

14. According to this table, which age group has the lowest percentage of hypertension?

15. What is the relationship between age and percentage for subjects with hypertension?

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16. According to this table, do women or men account for a higher percentage of subjects with high blood pressure?

REFLECTING ON YOUR APPROACH

17. What other information would you need to study hypertension in more depth?

18. In your opinion, why does arterial pressure increase with age?