

Section 4.1 Statistical Measures

- Calculate the per capita value for each situation to three decimal places.
 - Number of school buses in Canada in 2005/2006: 35 000.
Number of students enrolled in public elementary and secondary schools in Canada in 2005/2006: 5 200 000.
 - Volume of eggnog sold in December in Canada in 2006: 5 900 000 L.
Canada's population: 32 900 000.
 - Area of agricultural land in Canada in 2006: 67 600 000 ha.
Canada's population: 32 900 000.
 - The mass of fresh spinach consumed in Canada in 2006: 8 900 000 kg.
Canada's population: 32 900 000.
- Calculate the percent change for each situation.
 - Height increased from 1.60 m to 1.66 m.
 - Average speed changed from 89.4 km/h to 38.5 km/h.
 - Annual spending decreased from \$24 556 to \$21 292.
 - The population increased from 223 450 to 682 903.
- The table shows the scores on a high school math competition, ranked from lowest to highest.

Score	Rank	Score	Rank
188	12	468	6
301	11	479	5
308	10	487	4
329	9	508	3
405	8	548	2
410	7	566	1

a) Determine the percentile rank of each score.

i) 329

ii) 548

b) Which score is in each percentile?

i) 60th percentile

ii) 25th percentile

- To calculate the final mark on an English test, Ms Lee weights the short answer section 30% and the essay question 70%. Determine the final test mark for each student.

Student	Short Answer (Out of 25)	Essay Question (Out of 40)
Caleb	16	30
Sunita	21	38
Danielle	19	20
Jesse	24	34
Gavin	20	32

- The table shows the number of births and populations in three provinces in 2006/2007.

Province	Number of Births	Population
Ontario	134 141	12 740 721
Alberta	44 661	3 430 221
British Columbia	42 306	4 348 583

Source: Statistics Canada, CANSIM Table 051-0013 and Table 051-0005. Database: E-STAT

A birth rate is the number of births per 1000 people to one decimal place. Determine the birth rate for each province.



Name: _____

Date: _____

6. The table shows the total number of births in Canada and population, as of January 1, by year.

Year	Number of Births	Population
2000/2001	327 107	30 828 130
2001/2002	328 155	31 182 843
2002/2003	330 523	31 505 085
2003/2004	337 762	31 821 342
2004/2005	339 270	32 136 939
2005/2006	345 355	32 466 635
2006/2007	352 848	32 798 684

Source: Statistics Canada, CANSIM Table 051-0013 and Table 051-0005. Database: E-STAT

- a) Calculate the birth rate per 1000 people for each year to one decimal place.
 b) Calculate the percent change in the birth rate for each year.
 c) Describe what happened to the birth rate from 2000/2001 to 2006/2007.
7. Recall that the Scholastic Aptitude Test (SAT) contains three components, reading, writing, and mathematics, each marked out of 800. Students are then ranked by percentile in each component. Approximately 1 500 000 students write the SAT test each year. The table shows percentiles for selected marks.

Mark	Reading	Writing	Mathematics
800	99	99	99
750	98	99	98
700	95	96	93
600	79	81	74
500	48	51	43
400	17	18	14
300	3	3	3

- a) Jacob scored 700 in reading, 600 in writing, and 750 in mathematics. What was his mean percentile ranking?
 b) Carmen's writing score was 500. Of the students who wrote the test, what was her overall ranking from the bottom? What was her overall ranking from the top?
 c) Half of Michelle's essay for the writing section of the test was illegible. She scored 750 in reading, 300 in writing, and 800 in mathematics. What was her mean percentile ranking? What was her overall ranking from the top?
 d) Isaac ranked 315 000th from the top in reading. What was his percentile ranking? What was his mark on the reading test?

8. The table shows a company's profits each year for five years, as reported in a newspaper.

Year	Profit (\$)
2004	237 000
2005	395 000
2006	850 000
2007	1 002 000
2008	723 000

- a) Calculate the percent change in profit from 2004 to 2005.
 b) Calculate the percent change in profit from 2007 to 2008.
 c) The company's financial report stated: "Profits increased by over 200% from 2005 to 2006." Do you agree with this statement? Explain.

