

## C4 Percentiles

- Explain the meaning of a percentile.
- Solve problems involving percentiles.
- Calculate a percentile.
- Interpret percentile charts.

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## What is a Percentile?

**Percentile:** a value below which a certain percent of the data falls.

e.g. The median is the 50<sup>th</sup> percentile because 50% of the values in the data set are below the median.

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**Practice:** Explain what the following percentiles mean.

- a) A baby born with a weight of 7 lbs is in the 75<sup>th</sup> percentile.
- b) A cross-country skier finished a race in the 90<sup>th</sup> percentile.
- c) On a test, a student scored in the 60<sup>th</sup> percentile.

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## Solving Problems involving Percentiles

Many percentile problems involve using percentages to determine the number of data values below or above a certain value.

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**Examples:** a) Martha is in the 75<sup>th</sup> percentile for height in her class. If her class has 700 students, how many students are shorter than Martha?

b) 40 students wrote a Math exam. John got the same grade as 2 other students. If John is in the 60<sup>th</sup> percentile, how many students got a higher grade than John?

**Practice:** Percentile Problems Handout

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## Calculate Percentiles

$$\text{Percentile} = \frac{\text{\# of data values below}}{\text{total \# of data values}} \times 100$$

**Examples:** a) On a math quiz, Susie had the 4<sup>th</sup> highest mark out of 40 students. What is the percentile for Susie's mark on this quiz?

b) The students in a drama class earned the following grades on a presentation:

75%, 76%, 77%, 79%, 80%, 81%, 82%, 84%, 85%, 87%, 88%, 89%, 90%, 91%, 92%, 94%, 95%, 96%, 98%, 100%

Megan earned a grade of 80%. What was her percentile?

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## Your Turn (Board Work)

Great Canadian Insurance Company is evaluating the amount of coverage they offer for various services. They have collected the following data about the cost of a physiotherapy session at various clinics in Vancouver, BC. (MathWorks12 pg. 137)

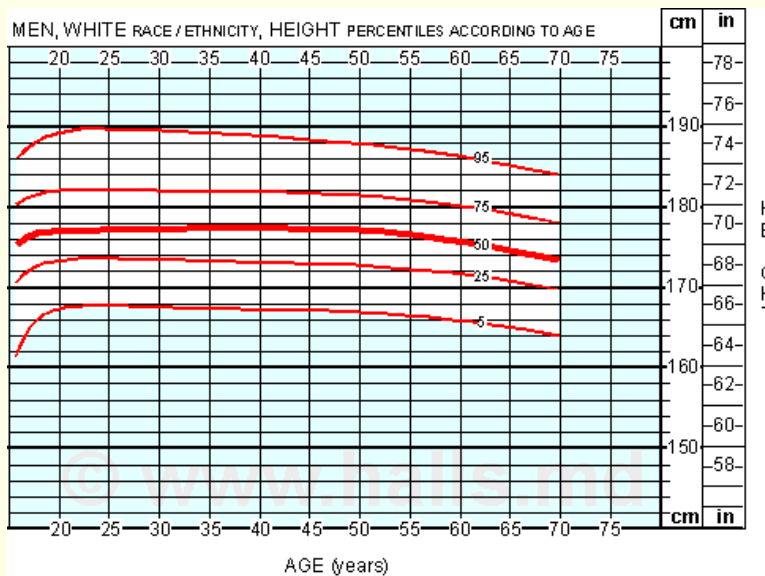
\$95.00, \$66.00, \$56.00, \$50.00, \$60.00, \$60.00,  
 \$55.00, \$55.00, \$145.00, \$140.00, \$140.00, \$75.00,  
 \$85.00, \$90.00, \$59.00

- a) Calculate the percentile for a cost of \$85.00.
  
- b) Insurance companies often use the 80<sup>th</sup> percentile of costs for a given area to decide how much to cover for services. Determine how much the insurance company will cover for Vancouver, BC.

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## Percentile Charts

Discuss percentile charts.



**Practice:** Use handout to find your height and weight percentile. (Tape Measures)  
 Text pg. 90-91: 5,6

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