# Step-by-Step 1

**Lesson 1, Question 7**

**Step 1**    What are some ways your classmates keep in touch with their friends?

_____

_____

Which way do you think is their favourite?

_____

**Step 2**    Write a question you could ask to find out.
Make sure there is a choice for everyone.

_____

**Step 3**    Ask the question. Tally your results.

| Response | Tally | Number of Students |
|---|---|---|
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

**Step 4**    Compare your results with your prediction in *Step 1*. What do you notice?

_____

_____

# Lesson 7.1: Mean and Mode

1. Calculate the mean for each data set below. Write each answer to the nearest whole number.
   a) 2, 4, 7, 4, 8, 9, 12
   b) 24, 34, 44, 31
   c) 1, 2, 3, 4, 5, 6, 7, 8, 9
   d) 4, 8, 12, 16, 20, 24

2. Find the mode for each data set below.
   a) 3, 4, 5, 2, 3, 2, 4, 5, 6, 3, 2, 3
   b) 45, 32, 56, 45, 65, 74, 32, 45, 73
   c) 143, 534, 486, 534, 573, 143
   d) 70, 73, 74, 72, 71, 76, 75, 77

3. This table shows the statistics for 7 players on the Bobville Baseball Buzzards.

| Name | Games Played | Hits | Strikeouts |
|------|------|------|------|
| Green | 104 | 129 | 90 |
| Brown | 107 | 129 | 60 |
| White | 89 | 71 | 62 |
| Black | 39 | 17 | 7 |
| Rose | 23 | 17 | 11 |
| Silver | 22 | 11 | 10 |
| Gold | 17 | 17 | 10 |

   a) Write each answer to the nearest whole number.
   Calculate the mean for each of the following:
   - Games Played
   - Hits
   - Strikeouts
   b) Find the mode for each of the following:
   - Games Played
   - Hits
   - Strikeouts

# Lesson 7.2: Median and Range

1. Find the median and range of each
   a) 65, 50, 80, 45, 90, 80, 75
   b) 12, 34, 17, 25, 45, 16, 21, 24
   c) 63, 47, 215, 148, 532, 28
   d) 44, 36, 53, 31, 40, 36, 112, 69, 22, 52

2. Eight teams entered an ice-hockey tournament.The number of goals scored by each team in the tournament were:
   36, 39, 11, 9, 16, 5, 21, 40
   a) Find the range of goals scored.
   b) What is the median number of goals scored by each team in the tournament?

# Lesson 7.5: Probability

1. A pencil case contains 7 blue pens, 9 red pens, 6 pencils, 7 red coloured pencils, and 8 green coloured pencils.
   You pick one item at random. Find the probability of choosing:

   a) a red pen
   b) a coloured pencil
   c) a pencil
   d) a pen
   Express each probability three ways.

2. Think of an experiment for which an event occurs with each probability.

   a) 1:4      b) $\frac{1}{3}$   c) 1    d) 0%

3. There are these markers in a box: 3 purple, 5 black, 8 pink, and 4 red.
   You pick one marker without looking.
   Write each probability three ways.

   a) A black marker will be picked.
   b) A purple or red marker will be picked.
   c) A pink marker will not be picked.

4. One hundred twenty first-prize tickets were sold. Eighty-five second-prize tickets were sold. Seventy third-prize tickets were sold. Write each probability as many ways as you can.
   a) Kendall purchased 8 first-prize tickets. What is the probability that Kendall will win the first prize?

   b) Laura purchased 9 second-prize tickets. What is the probability that Laura will win the first prize?
   The second prize?
   c) Anthony purchased 25 third-prize tickets. What is the probability that Anthony will not win the third prize?

## Lesson 7.3: Probability of Independent Events

1. What is the probability of tossing two coins and having them both show heads?

2. Every time Mr. Coleborn throws a ball of paper in the garbage can, the probability the ball goes in the can is $\frac{3}{4}$. What is the probability he misses 2 times in a row?

4. An experiment consists of picking a card from a standard deck of playing cards and drawing a counter from a bag that contains 5 counters: 2 blue, 2 white, and 1 red.
   Find the probability of each event:
   a) Picking a spade and drawing a blue counter.
   b) Picking a red card and drawing a red counter.
   c) Picking a face card and not drawing a white counter.
   d)    Picking a diamond and drawing a green counter.

## Lesson 7.4: Solving Problems Involving Independent Events

1. A regular 6-sided die is rolled three times. Find the probability of each event:
   a) Three 6s in a row
   b) 5, 1, even
   c) Odd, greater than 2, 5

2. Each time Parker shoots a free throw in basketball, he has an 80% chance of making the shot.
   Suppose he is given 3 free throws. Find the probability of each event.
   a) Makes the basket, misses the basket, makes the basket
   b) Makes all 3 shots
   c) Misses all 3 shots
   d) Misses the first two shots and makes the third

4. Karen, Gavin, Nasra, and Ali each have a deck of playing cards.
   Each student randomly draws a card from the deck. Find the probability of each event:
   a) Each student draws a club.
   b) Karen draws a red card, Gavin draws a king, Nasra draws a black card, and Ali draws the 2 of clubs.
   c) Karen draws a heart, Gavin draws a heart, Nasra draws a face card, and Ali draws an ace.

# Probability

1. If you roll a die, what are the chances of rolling a two? answer: _____

2. If you roll a die, what is the probability that you will roll an even number? answer: _____

3. A bag contains 3 red marbles, 3 blue marbles, and 1 green marble. If a marble is drawn from the bag at random, what is the probability that the marble will be blue? answer: _____

4. A bag contains 6 number tiles. The numbers in the bag are 3, 7, 8, 9, 13, and 15. If you randomly draw one tile from the bag, what is the probability of picking an odd number? answer: _____

5. Mr. Jones has a hot air balloon. Because the basket is so small, he can take one child for a ride with him. Mary, Carla, John, Lynda, Peter, and Janessa all want to go. They each write their name on a piece of paper and place them in a hat. Mr. Jones randomly selects one child to go with him.

   What is the probability that he will select a boy? answer: _____

   What is the probability that he will select a girl? answer: _____

6. John and Jackie are rolling a die. John wins if he rolls a number higher than 4. Jackie wins if the number rolled is 4 or less. Is this game fair? Explain.

# Answers

## Lesson 7.1

1. **a)** 7    **b)** 33    **c)** 5    **d)** 14
2. **a)** 3    **b)** 45    **c)** 143, 534
   **d)** No mode
3. **a)** 57, 56, 36       **b)** No mode, 17, 10

## Lesson 7.2

1. **a)** 75, 45       **b)** 22.5, 33
   **c)** 105.5, 504     **d)** 42, 90
2. **a)** 35          **b)** 18.5
3. **a)** For example: 10, 12, 14, 16, 18
   **b)** For example: 7, 8, 9, 10, 14, 22, 23, 24, 25, 26
   **c)** For example: 3, 9, 11, 14, 16, 17, 19, 21
4. **a)** The 12th number
   **b)** The mean of the 12th and 13th numbers
5. For example, 20, 25, 33, 34, 38 and 19, 24, 33, 33, 41
6. **a)** For example, the ages in years might be: 18, 18, 19, 23, 31, 34, 34, 37, 39, 45, 53, 60
   **b)** For example, the ages in years might be: 21, 25, 29, 39, 45, 45, 45, 51, 71, 78

## Lesson 7.5

1. **a)** $\frac{9}{37}$ , 9:37, about 24%     **b)** $\frac{15}{37}$, 15:37, about 41%

   **c)** $\frac{21}{37}$ , 21:37, about 57%    **d)** $\frac{16}{37}$, 16:37, about 43%

2. Answers may vary.
   **a)** Roll a 2 on a tetrahedron labelled 1 to 4.
   **b)** Draw a red counter from a bag that contains a red counter, a green counter, and a blue counter.
   **c)** Roll a number greater than 0 on a die labelled 1 to 6.
   **d)** Roll a number less than 0 on a die labelled 1 to 6.

3. **a)** $\frac{5}{20} = \frac{1}{4}$, 1:4, 25%       **b)** $\frac{7}{20}$, 7:20, 35%

   **c)** $\frac{20-8}{20} = \frac{12}{20} = \frac{3}{5}$, 3:5, 60%

4. **a)** $\frac{8}{120} = \frac{1}{15}$, 1:15, about 7%       **b)** 0, 0%; $\frac{9}{85}$, 9:85, about 11%

   **c)** $\frac{70-25}{70} = \frac{45}{70} = \frac{9}{14}$, 9:14, about 64%

## Extra Practice 3 – Master 7.19
**Lesson 7.3**

1. $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

2. $\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

4. a) $\frac{1}{4} \times \frac{2}{5} = \frac{2}{20} = \frac{1}{10}$

   b) $\frac{1}{2} \times \frac{1}{5} = \frac{1}{10}$

   c) $\frac{12}{52} \times \frac{3}{5} = \frac{3}{13} \times \frac{3}{5} = \frac{9}{65}$

   d) $0$

## Extra Practice 4 – Master 7.20
**Lesson 7.4**

1. a) $\frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} = \frac{1}{216}$

   b) $\frac{1}{6} \times \frac{1}{6} \times \frac{3}{6} = \frac{1}{6} \times \frac{1}{6} \times \frac{1}{2} = \frac{1}{72}$

   c) $\frac{3}{6} \times \frac{4}{6} \times \frac{1}{6} = \frac{1}{2} \times \frac{2}{3} \times \frac{1}{6} = \frac{1}{18}$

2. a) $0.8 \times 0.2 \times 0.8 = 0.128$ or $12.8\%$
   b) $0.8 \times 0.8 \times 0.8 = 0.512$ or $51.2\%$
   c) $0.2 \times 0.2 \times 0.2 = 0.008$ or $0.8\%$
   d) $0.2 \times 0.2 \times 0.8 = 0.032$ or $3.2\%$

4. a) $\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{1}{256}$

   b) $\frac{1}{2} \times \frac{4}{52} \times \frac{1}{2} \times \frac{1}{52} = \frac{1}{2704}$

   c) $\frac{1}{4} \times \frac{1}{4} \times \frac{12}{52} \times \frac{4}{52} = \frac{3}{2704}$