

Essential Math 40S

Probability Practice Test

KEY

1. The chart below shows the population of animals at a farm. Use the chart below to answer the questions which follow:

	# of males	# of females	Totals
Pigs	4	35	39
Cows	2	55	57
Chickens	1	78	79
Totals	7	168	175

You choose one animal at random from the farm.

- a) State the probability, expressed as a fraction, that the randomly selected animal is male.

$$\frac{7}{175}$$

- b) State the probability, expressed as a decimal, that the randomly selected animal is a pig.

$$0.22$$

- c) State the probability, expressed as a percentage, that the randomly selected animal is NOT a cow.

$$67.43\%$$

- d) State the probability, in any form, that the randomly selected animal is a unicorn.

$$0$$

- e) State the probability, in any form, that the randomly selected animal has legs.

$$1$$

2. State the probability $\frac{7}{12}$ as a decimal and as a percentage.

decimal: **0.58**

percentage: **58.33%**

3. Each letter of the word **H O T S H O T** is written on a different card. The cards are shuffled and placed face down on a table. One card is selected and then replaced.

a) State the probability of selecting a card with the letter T or S.

$$\frac{3}{7} \text{ (or 0.43 or 43.86\%)}$$

b) State the odds in favour of selecting a card with an H

$$2:5$$

c) the odds against selecting a card with a vowel (A, E, I, O, or U)

$$5:2$$

4. Your child's school is holding a fundraising lottery. It costs \$10 to buy a ticket. There is a $\frac{1}{20}$ chance of winning a prize basket worth \$25. There is a $\frac{6}{20}$ chance of winning a McDonald's gift card worth \$5.

a) Calculate the expected value for this lottery.

$$E.V. = \frac{1}{20}(15) - \frac{6}{20}(5) - \frac{13}{20}(10)$$

$$E.V. = -\$7.25$$

b) Will this lottery make money for the school? Justify your answer. You must mention the expected value in your answer to receive marks.

This lottery will make money for the school – on average the school will make \$3.50 for every person that buys a ticket.

5. You just bet on a horse at the horse races whose probability of winning the race is $\frac{3}{17}$. What are the odds of this horse winning?

3: 14

6. The odds that you will meet a person with a name that starts with the letter B are 9: 2. What is the probability that you will meet a person with a name that starts with the letter B?

$$\frac{9}{11}$$

7. The probability that the Minnesota Vikings (an NFL football team) make it to the playoffs is 0.18. Find the odds that they will make it to the playoffs.

18: 82

8. The odds against Gord going out for a jog on any given morning is 15:1. Find the probability that Gord will go out for a jog.

$$\frac{1}{16}$$

9. You and five other students always volunteer to go help out at a cat rescue shelter. The shelter selects one of the six of you at random to help out. Your friend Sally has been selected 7 out of the last 10 times they asked for volunteers.

- a) What is the experimental probability that they will pick Sally?

$$\frac{7}{10}$$

- b) What is the theoretical probability that they will pick Sally?

$$\frac{1}{6}$$

- c) Why are the answers to a) and b) different?

Answer a) is what DID happen, answer b) is what SHOULD happen.