**Math 3202 Midterm Review**

**Unit 1**

**1.** The minimum allowable height of a step is 125 mm. The maximum height is 200 mm. What is an expression for the tolerance of a step height?

**A** 150 mm ± 50 mm

**B** 175 mm ± 25 mm

**C** 155.5 mm ± 44.5 mm

**D** 162.5 mm ± 37.5 mm

**2.** What are the odds of correctly guessing the answers to two multiple choice questions when there are four options?

**A** 1:3 **B** 1:9

**C** 1:15 **D** 1:16

**3.** What is the probability of drawing a spade from a deck of 52 cards?

**A** 60% **B** 

**C** 50:50 **D** 4.0

**4.** A coin is tossed five times. The results are one head followed by four tails. What is the probability that the next toss will be heads?

**A**  **B** 

**C** 80% **D** 90%

**5.** What is the probability of three coin tosses resulting in three tails?

**A** 50-50 **B** 1:8

**C**  **D** 

**6.** A weather forecaster predicts that Saturday will have a 60% chance of rain. Which statement is true based on the forecaster’s prediction?

**A** It will rain for 60% of the day on Saturday.

**B** Saturday will probably have sunny periods.

**C** The rain on Saturday will
be light.

**D** There is a 3 out of 5 chance of rain on Saturday.

**7.** Is 214 000 L an allowable volume for a 216 000-L pool with a tolerance of ±1200 L?

**8.** Determine the probability of each outcome.

**a)** rolling a total of 3 with two different dice. Express your answer as a fraction.

**b)** drawing a face card from a standard deck of cards. Express your answer as a percent.

**c)** Getting heads and a heart when flipping a coin and choosing a card from a standard deck. Express
your answer as a fraction.

**9.** Rick and Emily are discussing the statement “The more you toss heads in a row, the more likely you will toss a tails next.” Rick says it is common sense and Emily says it is not mathematical thinking. Do you agree with Rick, Emily, or neither? Explain your thinking.

**10.** Lucy manages a produce store. When ordering apples, she expects that 15% of the apples will arrive spoiled.

**a)** If she orders 350 kg of apples, how many kilograms would she expect to arrive spoiled?

**b)** On one order, 30 kg of the apples arrived spoiled. How many kilograms would you expect Lucy ordered?

**11.** A three-colour spinner is spun, followed by a toss of a coin, followed by drawing a card from a regular deck of cards. What is the chance that you will correctly predict all three possible outcomes? Express your answer as a fraction.

**Unit 2**

**1.** Which measure of central tendency should the manager
of a shoe store use to order the most common size of shoe?

**A** mode

**B** median

**C** mean or average

**D** trimmed mean

**2.** For which of the following would the mean be the best measure of central tendency?

**A** the overall mark on a series of chapter tests

**B** the most common shirt size in a grade 10 class

**C** the yearly income that is middle-ranked in a province

**D** the total yearly rainfall in a geographical area

**3.** A science experiment was done to measure the effect of fertilizer on tree growth. One tree out of the 70 tested did not grow at all, while the rest of the trees nearly doubled in height. Which of the following best describes the data?

**A** Mode is very valuable in this case.

**B** The data set contains an outlier.

**C** The data set shows that one of the trees was diseased.

**D** The data set is not useful.

**4.** In a stem-and-leaf plot, which forms the leaf?

**A** the ones digit

**B** the tens digit

**C** the ones and greater digit

**D** the tens and greater digit

**5.** In this data set, which value represents the 70th percentile?
5, 8, 9, 10, 12, 15, 19, 21, 22, 25

**A** 8

**B** 9

**C** 19

**D** 21

**6.** Caleb received the following marks in biology.

|  |  |  |
| --- | --- | --- |
| Course Work | Weighting (%) | Mark (%) |
| Quiz | 10 | 64 |
| Test 1 | 15 | 70 |
| Test 2 | 15 | 74 |
| Project | 30 | 81 |
| Exam | 30 | 76 |

 Caleb was pleased that his teacher calculated the mark
using a weighted mean. Explain why he was pleased. Show your calculations.

**7.** Ramon has a summer job at a paper mill. He measures the acidity (pH) in a particular tank and gets the following results: 7.8, 7.9, 7.7, 7.8, 8.0, 0.8, 8.1.

**a)** Find the three measures of central tendency. Round each to the nearest tenth.

**b)** What is the range of the
data set?

**c)** Which data value(s) appears to be an outlier(s)?

**d)** Calculate the trimmed mean by removing the highest and lowest values.

**Unit 3**

**1.** Trudy earns a base monthly salary of $1500 and a 10% commission on all sales, *s*.
Which equation best represents Trudy’s monthly income, *I*?

**A** *I* = 10*s* + 1500

**B** *I* = 0.10*s* + 1500

**C** *I* = 0.10 (*s* + 1500)

**D** *I* =  + 1500

**2.** Which equation represents a
non-linear relationship?

**A** *x* = *y*

**B** *y* = 2*x*

**C** *y* = *x* + 2

**D** *y* = *x*2

**3.** A rental bicycle costs $20 plus
$5 per hour. What is the cost
of a 5-h rental?

**A** $120 **B** $55

**C** $45 **D** $25

**4.** **a)** Graph the data in the table below. (Use graph paper)

|  |  |
| --- | --- |
| *x* | *y* |
| 0 | 1 |
| 1 | 3 |
| 2 | 5 |
| 3 | 7 |
| 4 | 9 |

**b)** Write an equation that models the relationship between *x* and *y*.

**c)** Is the relationship a direct or partial variation? Explain.

 **5.** Ben records the growth of a bean plant. The table shows the results.

|  |  |
| --- | --- |
| Day | Height of Plant (cm) |
|  0 |  0 |
|  5 |  3 |
| 10 |  6 |
| 15 |  9 |
| 20 | 12 |

1. Sketch a graph of the data in the table. Draw a line of
best fit. (Use graph paper)

**b)** What is the equation of the line?

**6.** **a)** Create a table of values for the equation *y* = 2*x* – 2.

**b)** Use the table of values or the equation to sketch a graph of the relation. (Use graph paper)

**7.** What are the slope and *y*-intercept of each equation?

**a)** *y* = *x* + 1

1. *y* = 1 – *x*
2. *y* = 3*x*
3. *y* = 2*x* + 3

**8.** The graph of a relationship between *x* and *y* has a slope of 6 and a *y-*intercept of 2.

**a)** What is the equation of the line?

**b)** What is the value of the relationship when *x* is 2?