INTENSIVE REVISION QUESTIONS (ERQ)
SET 19-PROBABILITY DISTRIBUTION
Name :…….
Form :……
Teacher:…….

1. A normal distribution has a mean of 25 and standard deviation of 3. Determine the score that corresponds to the standard score of –1.4. [2 marks]

2. The probability that Feisal is late for work is 0.1. Calculate the probability that he is late for work on 4 out of 6 days. [3 marks]

3. The mass of students in a community college has a normal distribution with a mean of 70 kg and a standard deviation of 7.14 kg. Find the percentage of students in the community college with mass greater than 65 kg. [3 marks]

4. A normal distribution has a mean of 67 and standard deviation of 9. Determine the standard score of 78. [2 marks]

5. The content of breakfast cereal packets have masses which are normally distributed with a mean of 350 g and a standard deviation of 12.267 g. Determine the percentage that a randomly selected packet of the breakfast cereal has a mass exceeding 373 g. [3 marks]

6. A normal distribution has a mean of 67 and standard deviation of 13. Determine the standard score of 76. [2 marks]

7. X is a random variable having a normal distribution with mean 172 and variance 289. Find the corresponding x-value for each of the following z-values.
   (a) $z = -6.24$
   (b) $z = -1.82$ [4 marks]

8. 20 % of the workers in a company are graduates. 90 workers are randomly selected from the company. Determine
   (a) the mean number of selected graduates,
   (b) the standard deviation of the number of selected graduates. [4 marks]

9. A random variable, X, is normally distributed with a mean of 79 and a standard deviation of 11. Convert each of the following x-values to a z-value.
   (a) $x = 67$
   (b) $x = 99$ [4 marks]

10. 20% of the pears in a basket is rotten. If 30 pears are chosen are random from the basket, find the probability that exactly 5 rotten pears are chosen. [2 marks]

11. A normal distribution has a mean of 16 and standard deviation of 8. Determine the score that corresponds to the standard score of −1.2. [2 marks]

12. A fortune teller claims to be able to predict the sex of unborn children. The probability that she makes a correct prediction is 0.8. Find the probability that she makes exactly 7 correct predictions out of 10 consultations. [4 marks]

13. A fortune teller claims to be able to predict the sex of unborn children. The probability that she makes a correct prediction is 0.7. Find the probability that she makes exactly 8 correct predictions out of 10 consultations. [4 marks]

14. In a batch of 500 toy cars produced by a company *A*, past experience would suggest that 20 could be faulty. If 5 toy cars are selected at random, find the probability that at least one is faulty. [3 marks]

15. The diameters of steel disks produced in a plant are normally distributed with a mean of 47 cm and standard deviation of 3.891 cm. Find the probability that a disk picked at random has a diameter greater than 40 cm. [3 marks]

16. 40 % of the workers in a company are graduates. 150 workers are randomly selected from the company. Determine
    (a) the mean number of selected graduates,
    (b) the standard deviation of the number of selected graduates. [4 marks]

17. A random variable, X, is normally distributed with a mean of 97 and a standard deviation of 15. Convert each of the following x-values to a z-value.
    (a) $x = 96$
    (b) $x = 119$ [4 marks]

18. The diameters of steel disks produced in a plant are normally distributed with a mean of 47 cm and standard deviation of 4.452 cm. Find the probability that a disk picked at random has a diameter greater than 39 cm. [3 marks]

19. The mass of students in a community college has a normal distribution with a mean of 50 kg and a standard deviation of 3.75 kg. Find the percentage of students in the community college with mass greater than 47 kg. [3 marks]

20. In a batch of 500 toy cars produced by a company *A*, past experience would suggest that 10 could be faulty. If 4 toy cars are selected at random, find the probability that at least one is faulty. [3 marks]

Answers:

1. 20.8
2. 0.0012

3. 75.8 %
4. 1.2222
5. 3.04%
6. 0.6923
7. (a) $z = 66$
   (b) $z = 141$
8. (a) 18
   (b) 3.7947
9. (a) $z = -1.1$
   (b) $z = 1.8$
10. 0.1723
11. 6.4
12. 0.2013
13. 0.2335
14. 0.1846
15. 0.964
16. (a) 60
    (b) 6
17. (a) $z = -0.1$
    (b) $z = 1.5$
18. 0.9638
19. 78.81 %
20. 0.0776