HORNSBY GIRLS HIGH SCHOOL

Year 9 Mathematics

Assessment 4 Term 4 2021

NAME: _____ TEACHER: _____

CLASS (PLEASE CIRCLE) 9MT 9MK 9MG 9MS

General Instructions

- Working Time – 50 minutes
- Write using black or blue pen, Black pen is preferred
- NESA-approved calculators may be used
- Show all necessary working. Marks may be deducted for untidy and poorly arranged work
- Do not use correction fluid or tape
- Marks are indicated next to each question

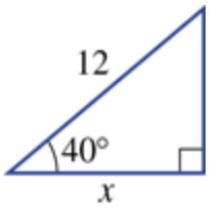
	Totals
Multiple Choice	
Q1-8 (Trigonometry)	*/8*
Q9-13 (Financial Math)	*/5*
Q14-20 (Data Analysis)	*/7*
Question 1 (Data Analysis)	*/5*
Question 2 (Financial Math)	*/4*
Question 3 (Trigonometry)	*/5*
Question 4 (Trigonometry)	*/3*
Total	*/37*

This assessment task constitutes 30% of the Course Assessment

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Multiple Choice (20 marks)
CIRCLE THE CORRECT ANSWER

Q1. In the diagram below, the value of x is equal to:



A) $\frac{12}{\cos 40°}$

B) $12\tan 40°$

C) $12\cos 40°$

D) $\frac{12}{\tan 40°}$

Q2. In the diagram below, which of the following is the angle θ, correct to the nearest minute?



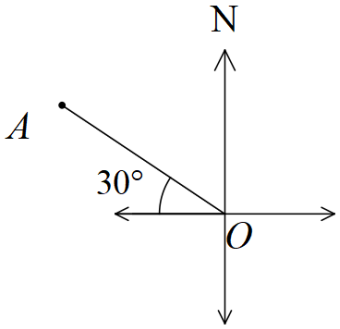
A) 56°15'

B) 29°3'

C) 60°57'

D) 33°45'

Q3. What is the bearing of A from O?



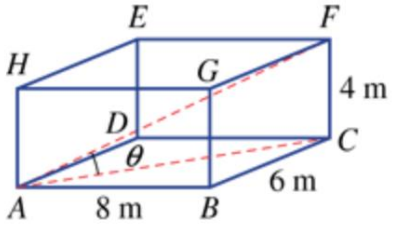
A) $N30°W$

B) $060°T$

C) $W60°N$

D) $300°T$

Q4. The angle θ that FA makes with the base of the rectangular prism is closest to:



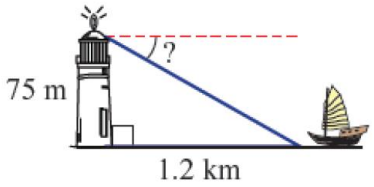
A) 68°

B) 22°

C) 16°

D) 27°

Q5. What is the angle of depression, correct to the nearest degree, from a lighthouse beacon 75 m to a boat that is 1.2 km from the base of the lighthouse?



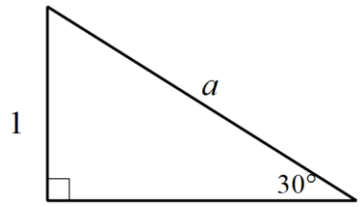
A) 2°

B) 4°

C) 86°

D) 89°

Q6. Which statement is correct?



A) $\tan 60° = \sqrt{a^2 - 1}$

B) $\cos 30° = \frac{1}{a}$

C) $\sin 30° = a$

D) $\tan 30° = \frac{1}{a^2 - 1}$

Q7. Which of the following is **not** equal to $\sin 20°$?

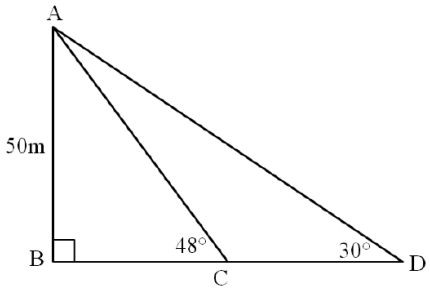
A) $\sin 160°$

B) $\cos 70°$

C) $\tan 20° \times \cos 20°$

D) $\frac{\tan 20°}{\cos 20°}$

Q8. The distance **CD** is closest to:



A) 67.2m

B) 26.7m

C) 67.3m

D) 41.6m

Q9. Brendan invests $6000 at 10% p.a. simple interest. How many years will it take for Brendan's investment to double in value?

A) 9 years

B) 10 years

C) 11 years

D) 12 years

Q10. The interest, compounded yearly, on $4 600 at 12% p.a. for 2 years is:

A) $5770.24

B) $1104.00

C) $1170.24

D) $4600.00

Q11. A credit card has an interest rate of 21.9% p.a. (no interest free period). What is the compound interest charged on a spending of $1 700 for 15 days?

A) $15.30

B) $15.36

C) $1 715.30

D) $1 715.36

Q12. Using the below table, what is the monthly repayment for a loan of $320 000 at 8.25% p.a. for 25 years?

Monthly repayment per $1 000		
Term	**8.00%**	**8.25%**
20 years	$8.36	$8.52
25 years	$7.72	$7.88

A) $252.16

B) $272.64

C) $2 521.60

D) $2 726.40

Q13. A car was bought for $50 000. Its value depreciated 15% p.a. What is the value of the car after 5 years?

A) $22 185

B) $37 500

C) $100 568

D) $212 500

Q14. Which one of the following is affected by outliers?

A) Mode

B) Median

C) Standard deviation

D) Inter-quartile Range

Q15. The median of the data displayed in this stem-and-leaf plot is:

Stem	Leaf
0	3 4 5
1	0 1 1 2
2	4 5 6
3	0 1 2

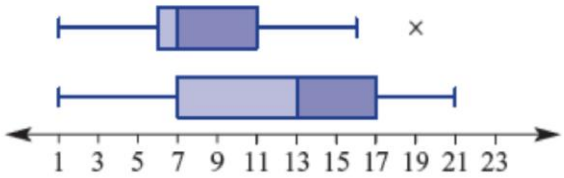
A) 10

B) 12

C) 24

D) 25

Q16. Which of the following statement is true?



A) Both have the same mean

B) Both have the same range

C) Both have the same minimum value

D) Both have the same interquartile range

Questions Q17 and Q18 refer to the following set of data:

3, 2, 7, 4, 2, 11

Q17. The mean and median respectively of the above set of data are:

A) 2 and 4.8

B) 4.8 and 5.5

C) 3.5 and 4.8

D) 4.8 and 3.5

Q18. The standard deviation of the above set of data is closest to:

A) 2.0

B) 3.2

C) 5.0

D) 7.9

Questions **19** and **20** refer to the following information.

This back-to-back stem-and-leaf plot shows the distribution of two data sets, each containing 12 data values. Their means and standard deviations are also given.

Set A	Stem	Set B
1 3 3 4 5	0	4 8 9
0 2 4	1	1
2 5 7 8	2	4 5 9
	3	0 3 5 6
	4	2

Set A:
$\overline{x} = 12.8$
$\sigma = 10.2$
Set B
$\overline{x} = 23.8$
$\sigma = 12.7$

Q19. Which statement justifies why the mean of set A is smaller than that of set B?

A) The distribution of data in set B is symmetric.

B) The data in set B are more spread out.

C) The data in set B are more closely clustered together.

D) There are several values in set B that are larger than those in set A.

Q20. Which statement justifies why the standard deviation of set A is smaller than that of set B?

A) The distribution of data in set B is symmetric.

B) The data in set B are more spread out.

C) The data in set B are more closely clustered together.

D) There are several values in set B that are larger than those in set A.

Short Answer Questions:

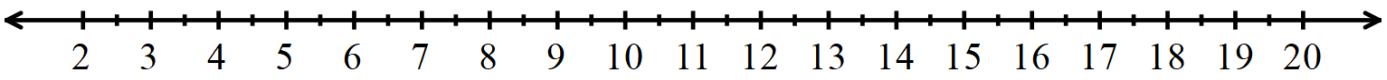
Question 1 **Marks**

Consider the given data set:

4, 4, 5, 7, 9, 9, 9, 11, 12, 17

a) For the data, find the IQR by finding Q1 and Q3. **2**

b) Using the following scale, draw a boxplot to summarise the data. **2**



c) Comment on the skewness of the distribution. **1**

Question 2

Addison borrowed $230 000 for a home loan with monthly repayments of $1350 for 25 years.

a) Calculate the total interest she will pay? **2**

b) Joseph has the same size loan with the same interest rate. Because he pays an extra $150 per month, his loan will be repaid in 19 years and 3 months. How much less interest than Addison will he pay? **2**

Question 3

A helicopter flies due south for 160 km from ***O*** to ***A***. It then turns and flies on a bearing of 125° for 120km to ***B***.

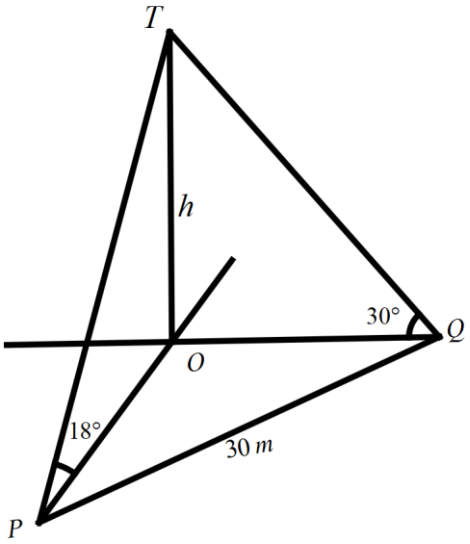
a) Sketch the path of the helicopter and label points and angles where necessary. **2**

b) How far east is the helicopter from its starting location ***O***? **1**
Express your answers correct to one decimal place.

c) Calculate the bearing the helicopter will need to take to return directly to its starting location ***O***? Express your answers correct to the nearest minute. **2**

Question 4 **3**

From a point ***P*** due south of a vertical tower ***TO***, the angle of elevation of the top of the tower is 18°. From a point ***Q*** due east of the tower, the angle of elevation is 30°. The distance from ***P*** to ***Q*** is 30 metres. What is the height of the tower? (Let ***h*** be the height of the tower)



END OF ASSESSMENT

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