High School **FRANS DU TOIT**

GRADE: 10

MATHEMATICS

TERM 1 INVESTIGATION 2021

MARKS: 50
DUE DATE: 6 APRIL 2021

EXAMINER : Ms. L. Liebenberg
MODERATOR: Mrs. N. Duvenhage

This investigation consists out of 7 pages and an ADDENDUM of 4 pages.

Name: _____ **Gr. 10** _____

INSTRUCTIONS

Read the following instructions carefully before answering the questions:

1. This question paper consists of 7 questions. Answer ALL the questions on this question paper.
   Do any DRAWINGS on the ADDENDUM.
2. A ruler and protractor are the mathematical tools that you may use for this investigation.
3. Make use of the colours green, blue, orange and pink when asked to draw.
4. Round ALL measurements off to the nearest ½ cm (see example).
   Eg: 0,1; 0,2; 0,3 ≈ 0,0 ; 0,4; 0,5; 0,6; 0,7 ≈ 0,5 ; 0,8; 0,9 ≈ 1,0
5. Make sure to adhere to the instructions at each question.
6. Write neatly and legibly.

VOCABULARY	
QUADRILATERAL:	**A shape with four sides and four angles (vertices).**
DIAGONAL:	**A line that joins one vertex of a quadrilateral with the opposite vertex.**
BISECT:	**To divide in half (two equal parts).**
PERPENDICULAR:	**Forming a 90° angle.**
PARALLEL:	**Lines are equidistant (equal perpendicular distance between the 2 lines at any point)**
MIDPOINT:	**The exact middle point of a straight line (the point that bisects the line).**

QUESTION 1 [15]

For QUESTION 1, work with Shapes ① and ② on the ADDENDUM.

1.1	At shape ① and ② measure the following sides using your ruler: AB = _____ BC = _____ CD = _____ AD = _____ EF = _____ FG = _____ GH = _____ EH = _____	(4)
1.2	Underline the correct answers of the following statements: The shape ABCD is a square / rectangle because opposite / all sides are equal. The shape EFGH is a square / rectangle because opposite / all sides are equal.	(2)
1.3	In shape ABCD, draw diagonal AC with green. Measure the length of AC. AC = _____	(1)
1.4	In shape ABCD, draw diagonal BD with blue. Measure the length of BD.	(1)

	BD = _____	
1.5	In shape EFGH, draw diagonal EG with green. Measure the length of EG. EG = _____	(1)
1.6	In shape EFGH, draw diagonal FH with blue. Measure the length of FH. FH = _____	(1)
1.7	What do these 2 shapes have in common? _____	(1)
1.8	In shape ABCD, indicate where the 2 diagonals cut (cross) with the letter X. Now measure: AX = _____ BX = _____ CX = _____ DX = _____	(2)
1.9	In the shape EFGH, indicate where the 2 diagonals cut (cross) with the letter Y. Now measure: EY = _____ FY = _____ GY = _____ HY = _____	(2)

QUESTION 2 [15]

For QUESTION 2, work with Shapes ③ and ④ on the ADDENDUM.

2.1	In shape ③ and ④ measure the following sides using your ruler: MN = _____ NO = _____ OP = _____ MP = _____ QR = _____ RS = _____ ST = _____ QT = _____	(4)
2.2	Underline the correct answers: The shape MNOP is a parallelogram / rhombus because opposite / all sides are equal. The shape QRST is a parallelogram / rhombus because opposite / all sides are equal.	(2)
2.3	In shape MNOP, draw diagonal MO with orange. Measure the length of MO. MO = _____	(1)
2.4	In shape MNOP, draw diagonal NP with pink. Measure the length of NP. NP = _____	(1)
2.5	In shape QRST, draw diagonal QS with orange. Measure the length of QS. QS = _____	(1)
2.6	In shape QRST, draw diagonal RT with pink. Measure the length of RT. RT = _____	(1)
2.7	In shape MNOP, indicate where the 2 diagonals cut (cross) with the letter X. Now measure: MX = _____ NX = _____ OX = _____ PX = _____	(2)

2.8	In the shape QRST, indicate where the 2 diagonals cut (cross) with the letter Y. Now measure: QY = _____ RY = _____ SY = _____ TY = _____	(2)
2.9	What do shapes ①, ②, ③ and ④ have in common? _____	(1)

QUESTION 3 [12]

For QUESTION 3, work with Shapes ⑤, ⑥, ⑦ and ⑧ on the ADDENDUM.

3.1	In shapes ⑤ to ⑧, measure the following angles using a protractor: $A\hat{X}B =$ _____ $C\hat{X}B =$ _____ $E\hat{Y}F =$ _____ $G\hat{Y}F =$ _____ $M\hat{X}N =$ _____ $O\hat{X}N =$ _____ $R\hat{Y}Q =$ _____ $T\hat{Y}Q =$ _____	(8)
3.2	Write down a conclusion about the diagonals of the 4 shapes. _____ _____	(2)
3.3	Can you provide a reason for your conclusion in 3.2? _____ _____ _____	(2)

QUESTION 4 [8]

For QUESTION 4, work with Shape ⑨ on the ADDENDUM.

4.1	Measure AB and BD. AB = _____ BD = _____	(1)
4.2	Measure AC and CE. AC = _____ CE = _____	(1)
4.3	Complete the following sentence: B is the _____ of line AD and C is the _____ of line AE.	(1)
4.4	Measure BC and DE. BC = _____ DE = _____	(1)
4.5	Write down the relationship between BC and DE. _____	(1)
4.5	Measure FG and CH. FG = _____ CH = _____	(1)
4.6	Write down the relationship between FG, CH and BD. _____	(1)
4.7	Complete: The line that joins the midpoints of 2 sides of a triangle, is _____ to the 3rd side and half the length of the 3rd side.	(1)

TOTAL: 50

Subject : Mathematics	**Grade : 10**
INVESTIGATION: ADDENDUM	**Date : _____ March 2021**
Time: 1 hour	

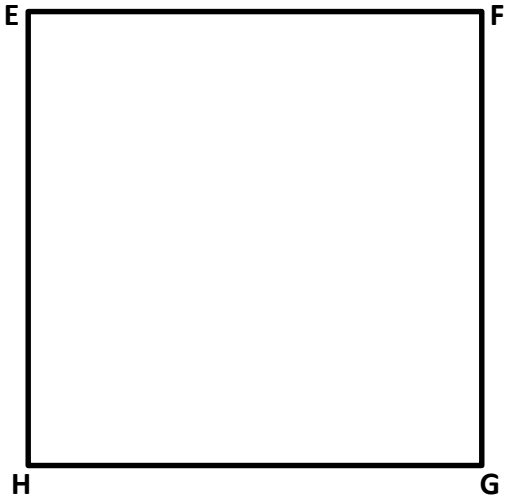
This ADDENDUM consists of 4 pages.

Name: _____ Gr. 10 _____

QUESTION 1 **[15]**

Shape ①

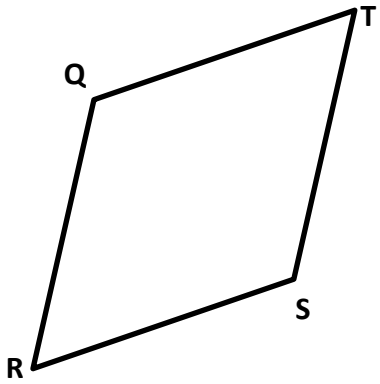
Shape ②



QUESTION 2 [15]

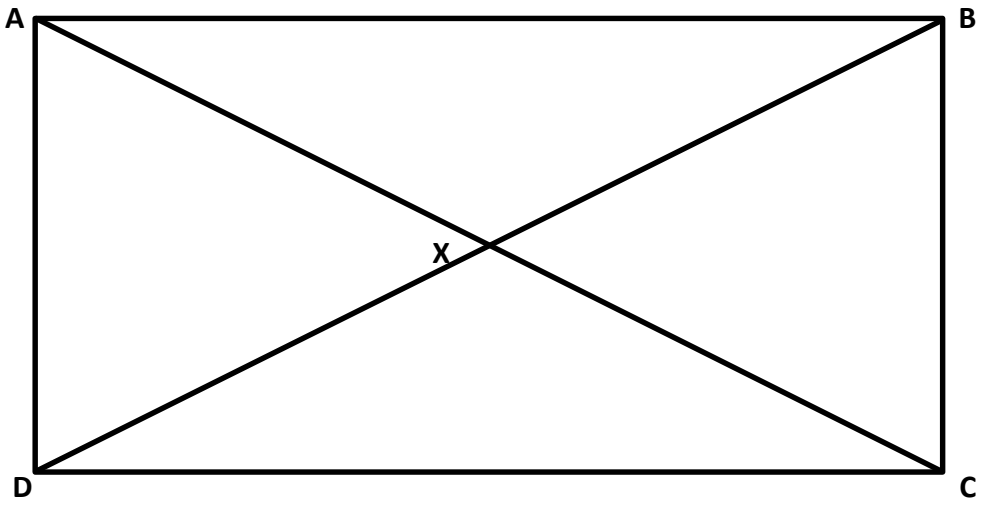
Shape ③

Shape ④

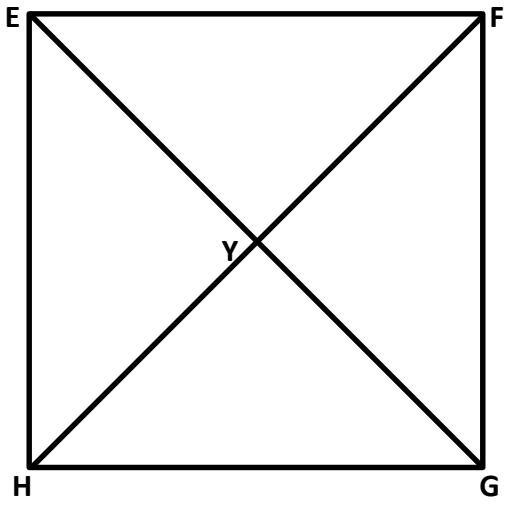


QUESTION 3 [12]

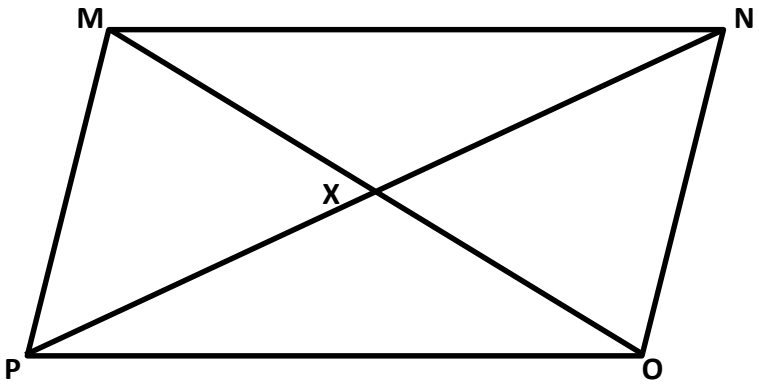
Shape ⑤



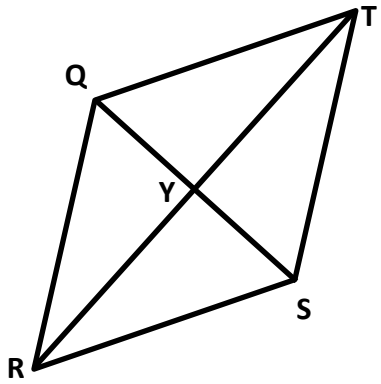
Shape ⑥



Shape ⑦

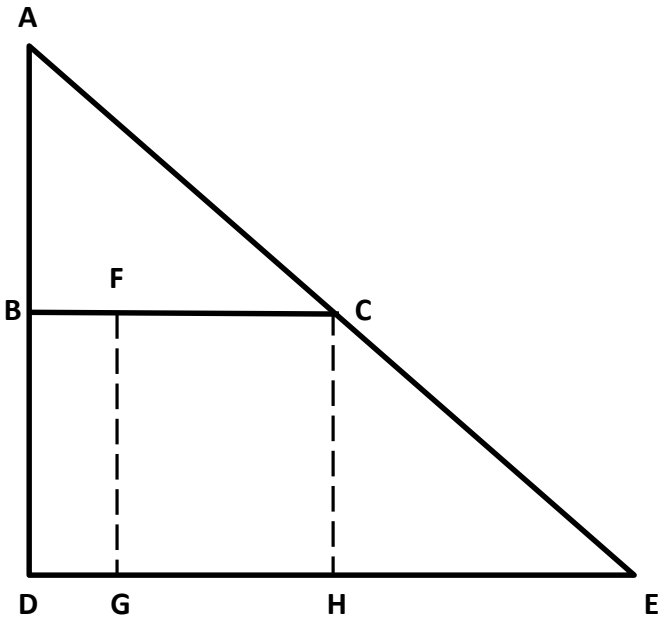


Shape ⑧



QUESTION 4 **[8]**

Shape ⑨



Triangle ADE is drawn. Point B is on side AD, point C is on side AE. Dotted lines FG and CH are drawn between lines BC and DE.

TOTAL: 50