GRADE 8 · NOVEMBER EXAM 2026

Preparation: Paper 2

Space and Shape (Geometry) · Measurement · Data Handling

TOTAL **145 marks** TIME **self-paced**

Prepared by Mr Simons (Danemathics)

A preparation worksheet for the Grade 8 Mathematics November examination: every type of question in the scope appears at least twice.

INSTRUCTIONS AND INFORMATION

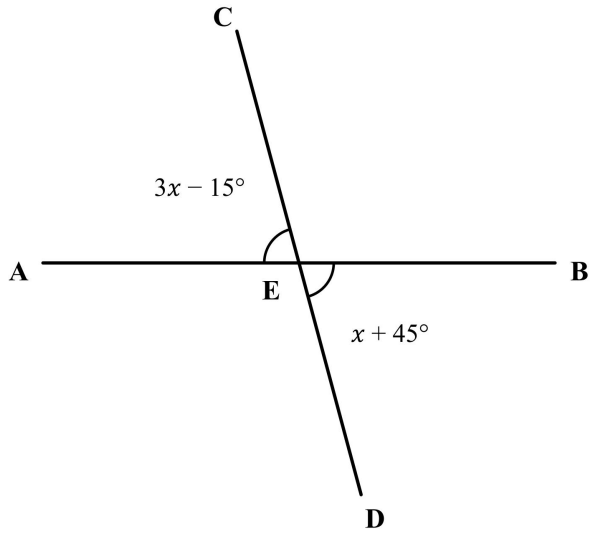
1. This worksheet prepares you for Paper 2 of the November examination. It covers the whole scope, and every type of question appears at least twice.
2. Answer the questions in your workbook, except QUESTIONS 4.1 and 4.4, which are answered on the ANNEXURE at the back of this worksheet.
3. Clearly show ALL calculations, diagrams, graphs, et cetera that you used to determine your answers.
4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
5. If necessary, round off answers to TWO decimal places, unless stated otherwise.
6. Diagrams are NOT necessarily drawn to scale.
7. Mark your own work with the memorandum, then redo every question that you got wrong.

QUESTION 1

1.1 Complete the following statement: When two parallel lines are cut by a transversal, the alternate angles are … (1)

1.2 Complete the following statement: The angles on a straight line add up to … (1)

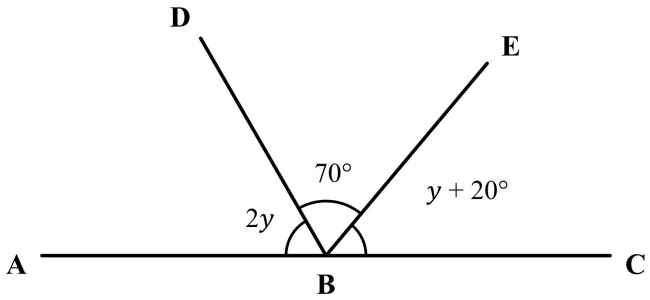
1.3 In the diagram below, the straight lines AB and CD intersect at E. $A\hat{E}C = 3x - 15°$ and $B\hat{E}D = x + 45°$.



1.3.1 Calculate the value of x. Give a reason for your answer. (3)

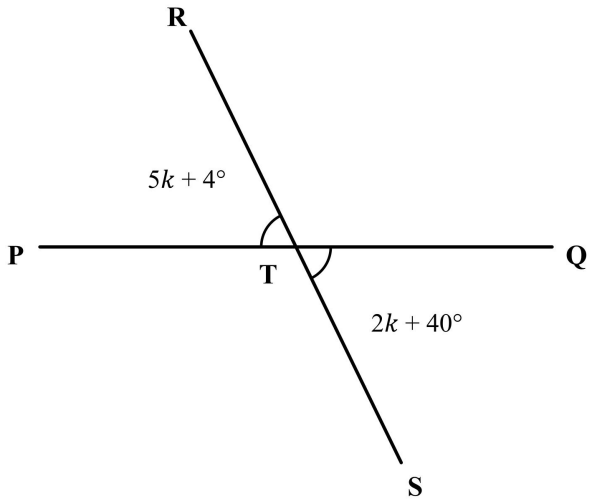
1.3.2 Hence, calculate the size of $C\hat{E}B$. Give a reason for your answer. (2)

1.4 In the diagram below, ABC is a straight line. $A\hat{B}D = 2y$, $D\hat{B}E = 70°$ and $E\hat{B}C = y + 20°$.



Calculate the value of y. Give a reason for your answer. (3)

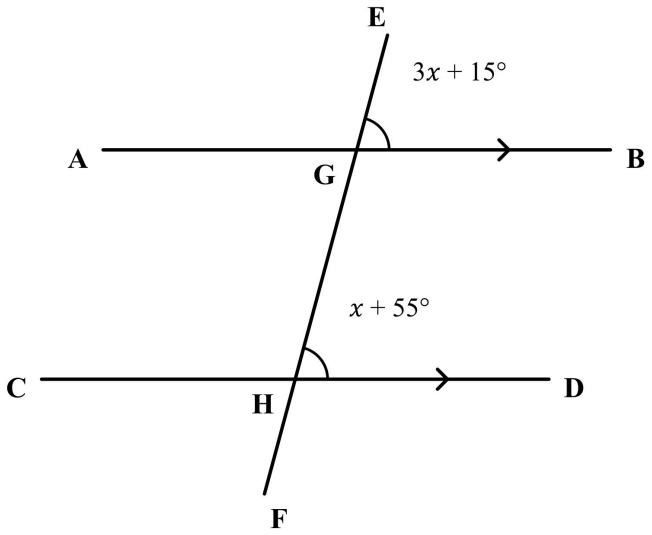
1.5 In the diagram below, the straight lines PQ and RS intersect at T. $P\hat{T}R = 5k + 4°$ and $Q\hat{T}S = 2k + 40°$.



1.5.1 Calculate the value of k. Give a reason for your answer. (3)

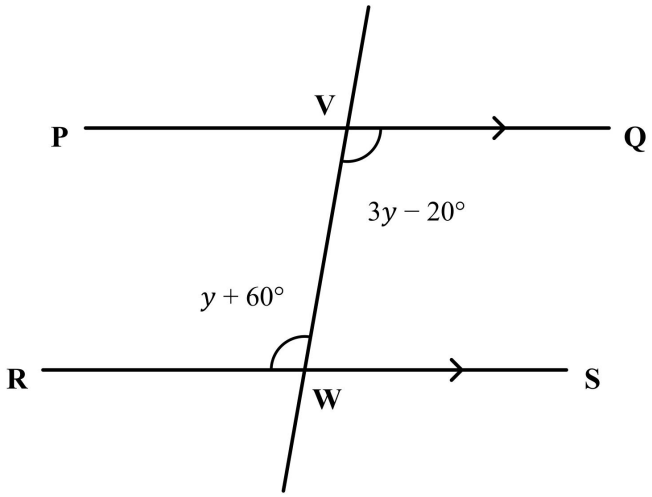
1.5.2 Hence, calculate the size of $P\hat{T}S$. Give a reason for your answer. (2)

1.6 In the diagram below, AB ∥ CD. The transversal EF cuts AB at G and CD at H. $E\hat{G}B = 3x + 15°$ and $G\hat{H}D = x + 55°$.



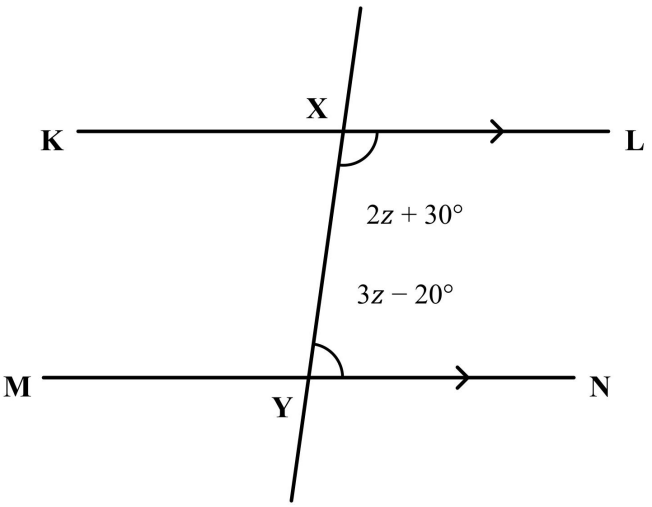
Calculate the value of x. Give a reason for your answer. (3)

1.7 In the diagram below, PQ ∥ RS. A transversal cuts PQ at V and RS at W. $Q\hat{V}W = 3y - 20°$ and $V\hat{W}R = y + 60°$.



Calculate the value of y. Give a reason for your answer. (3)

1.8 In the diagram below, KL ∥ MN. A transversal cuts KL at X and MN at Y. $L\hat{X}Y = 2z + 30°$ and $X\hat{Y}N = 3z - 20°$.



Calculate the value of z. Give a reason for your answer. (3)

[24]

QUESTION 2

2.1 Answer the following questions about quadrilaterals.

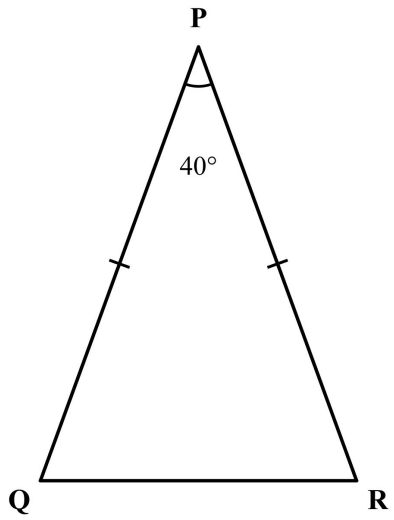
2.1.1 Write down the name of the quadrilateral that has four equal sides and both pairs of opposite sides parallel, but no right angles. (1)

2.1.2 Write down the name of the quadrilateral that has two pairs of adjacent sides equal. (1)

2.1.3 Is the following statement true or false? Every square is also a rectangle. (1)

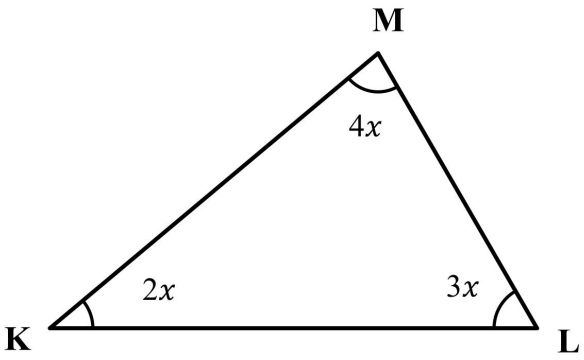
2.1.4 Is the following statement true or false? A trapezium has two pairs of parallel sides. (1)

2.2 In △PQR below, PQ = PR and $\hat{P} = 40°$.



Calculate the size of $\hat{Q}$. Give a reason for your answer. (3)

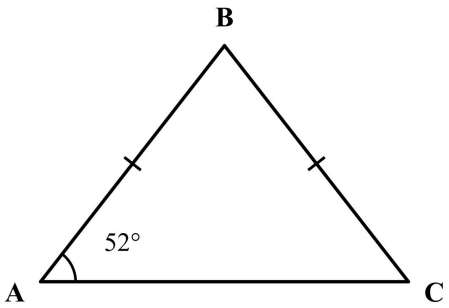
2.3 In △KLM below, $\hat{K} = 2x$, $\hat{L} = 3x$ and $\hat{M} = 4x$.



2.3.1 Calculate the value of x. Give a reason for your answer. (2)

2.3.2 Hence, write down the size of the largest angle of △KLM. (1)

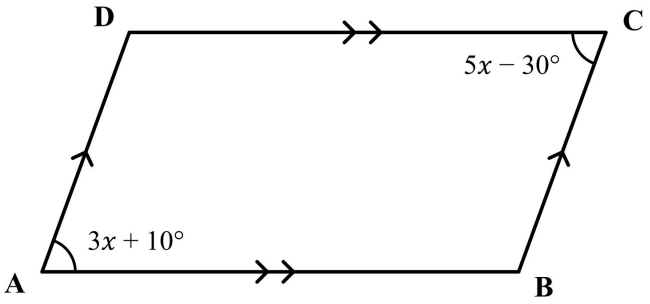
2.4 In △ABC below, AB = BC and $\hat{A} = 52°$.



2.4.1 Write down the size of $\hat{C}$. Give a reason for your answer. (2)

2.4.2 Calculate the size of $\hat{B}$. (1)

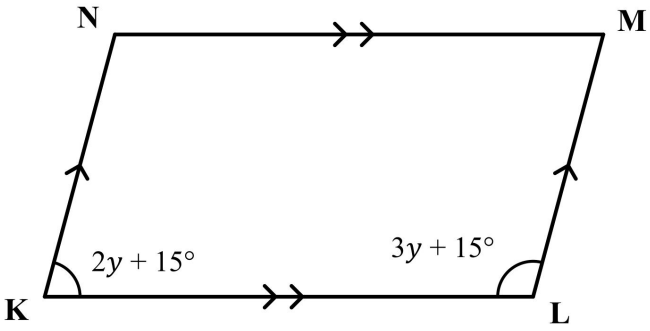
2.5 ABCD below is a parallelogram with $\hat{A} = 3x + 10°$ and $\hat{C} = 5x - 30°$.



2.5.1 Calculate the value of x. Give a reason for your answer. (2)

2.5.2 Hence, calculate the size of $\hat{B}$. Give a reason for your answer. (2)

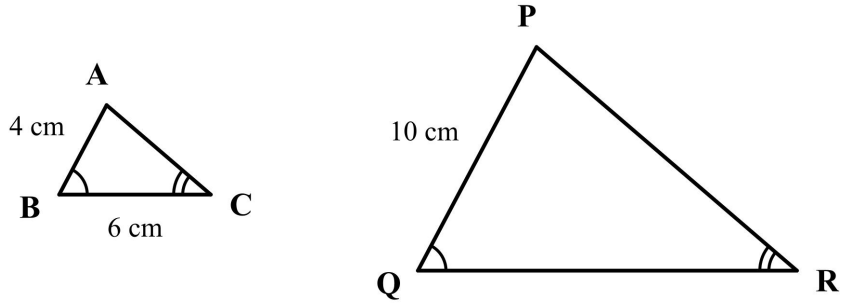
2.6 KLMN below is a parallelogram with $\hat{K} = 2y + 15°$ and $\hat{L} = 3y + 15°$.



2.6.1 Calculate the value of y. Give a reason for your answer. (2)

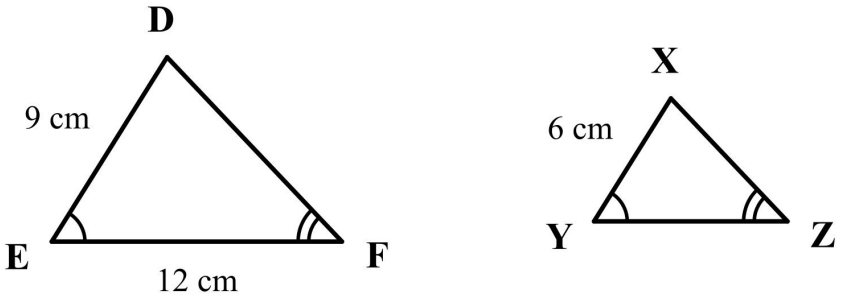
2.6.2 Hence, write down the size of $\hat{M}$. Give a reason for your answer. (2)

2.7 In the diagram below, △ABC ||| △PQR. AB = 4 cm, BC = 6 cm and PQ = 10 cm.



Calculate the length of QR. (2)

2.8 In the diagram below, △DEF ||| △XYZ. DE = 9 cm, EF = 12 cm and XY = 6 cm.

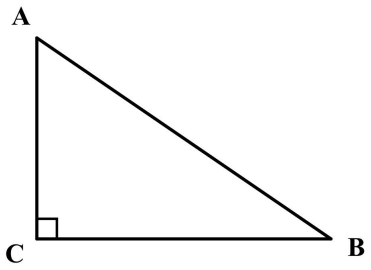


Calculate the length of YZ. (2)

[25]

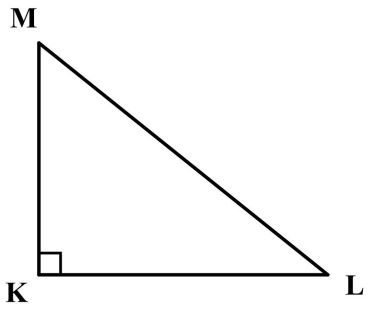
QUESTION 3

3.1 △ABC below is right-angled at C.



Write down the Theorem of Pythagoras for △ABC. (1)

3.2 △KLM below is right-angled at K.

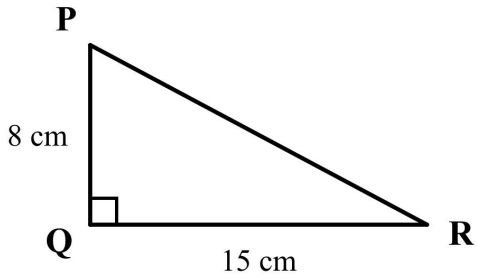


Write down the Theorem of Pythagoras for △KLM. (1)

3.3 Determine, by calculation, whether a triangle with sides of 7 cm, 24 cm and 25 cm is right-angled. (2)

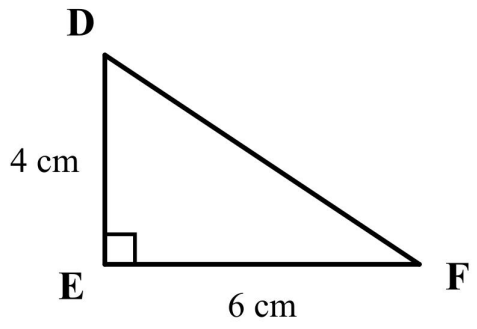
3.4 Determine, by calculation, whether a triangle with sides of 6 cm, 9 cm and 11 cm is right-angled. (2)

3.5 In △PQR below, $\hat{Q} = 90°$, PQ = 8 cm and QR = 15 cm.



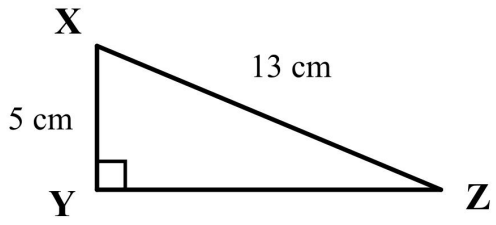
Calculate the length of PR. (2)

3.6 In △DEF below, $\hat{E} = 90°$, DE = 4 cm and EF = 6 cm.



Calculate the length of DF. Leave your answer in surd form. (2)

3.7 In △XYZ below, $\hat{Y} = 90°$, XY = 5 cm and XZ = 13 cm.

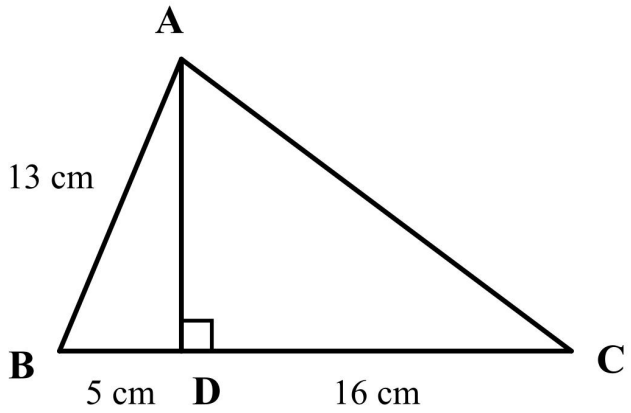


Calculate the length of YZ. (2)

3.8 A 10 m ladder leans against a vertical wall. The foot of the ladder is 6 m from the wall. How high up the wall does the ladder reach? (2)

3.9 Two ships leave a harbour. Ship A sails 9 km east and then 12 km north. Ship B sails 5 km east and then 12 km north. How much further from the harbour is Ship A than Ship B? (3)

3.10 In △ABC below, AD is perpendicular to BC, AB = 13 cm, BD = 5 cm and DC = 16 cm.



Calculate the length of AC. (3)

[20]

QUESTION 4

△DEF, with vertices D(2 ; 1), E(5 ; 1) and F(2 ; 4), is drawn on GRID A on the ANNEXURE.

4.1 On GRID A, draw △D'E'F', the image of △DEF after a reflection in the x-axis. Label the vertices. (2)

4.2 Write down the coordinates of the image of:

4.2.1 E after a reflection in the y-axis (1)

4.2.2 F after a rotation of 90° clockwise about the origin (1)

4.2.3 E after a rotation of 180° about the origin (1)

4.2.4 D after a translation of 3 units to the left and 2 units up (1)

4.3 △DEF is enlarged by a scale factor of 3, with the origin as the centre of enlargement.

4.3.1 Write down the coordinates of the image of F. (1)

4.3.2 How many times larger is the area of the enlarged triangle than the area of △DEF? (1)

△PQR, with vertices P(−5 ; 1), Q(−2 ; 1) and R(−2 ; 3), is drawn on GRID B on the ANNEXURE.

4.4 On GRID B, draw △P'Q'R', the image of △PQR after a translation of 5 units to the right and 2 units down. Label the vertices. (2)

4.5 Write down the coordinates of the image of:

4.5.1 the point M(−3 ; 5) after a reflection in the line $y = x$ (1)

4.5.2 the point K(−1 ; −6) after a rotation of 90° anticlockwise about the origin (1)

4.6 Describe each of the following transformations fully:

4.6.1 A(2 ; −7) → A'(−2 ; 7) (1)

4.6.2 B(6 ; 1) → B'(6 ; −1) (1)

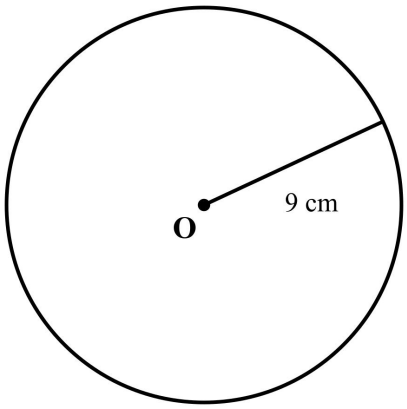
4.6.3 C(−4 ; 3) → C'(1 ; 3) (1)

4.7 A square with sides of 2 cm is enlarged by a scale factor of 4. Calculate the area of the enlarged square. (2)

[17]

QUESTION 5

5.1 The circle below, with centre O, has a radius of 9 cm. Use the π-key on your calculator in this question.



5.1.1 Write down the length of the diameter. (1)

5.1.2 Calculate the circumference of the circle. (2)

5.1.3 Calculate the area of the circle. (2)

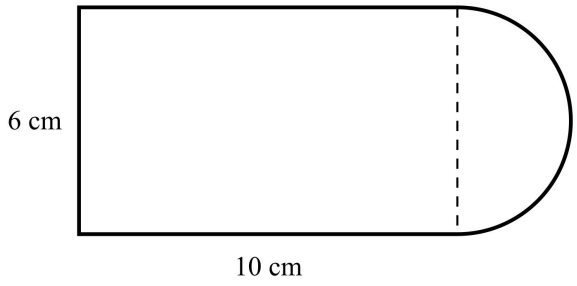
5.2 A circular garden has a diameter of 10 m. Use the π-key on your calculator.

5.2.1 Write down the radius of the garden. (1)

5.2.2 Calculate the length of the fence around the garden. (2)

5.2.3 Calculate the area of the garden. (2)

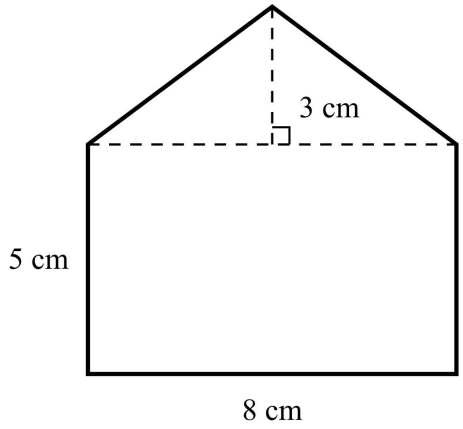
5.3 The figure below consists of a rectangle measuring 10 cm by 6 cm and a semicircle.



5.3.1 Calculate the area of the figure. (3)

5.3.2 Calculate the perimeter of the figure. (3)

5.4 The figure below consists of a rectangle measuring 8 cm by 5 cm and a triangle with a perpendicular height of 3 cm.



Calculate the area of the figure. (3)

5.5 Convert each of the following:

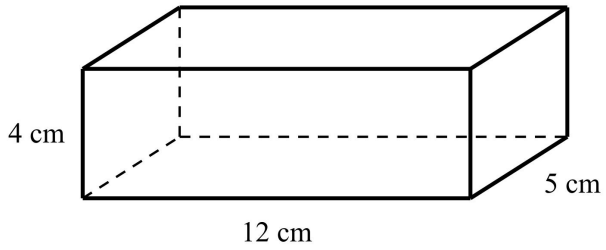
5.5.1 4,2 m² to cm² (1)

5.5.2 85 000 cm² to square metres (1)

[21]

QUESTION 6

6.1 A closed rectangular box measures 12 cm by 5 cm by 4 cm, as shown below.



6.1.1 Calculate the volume of the box. (1)

6.1.2 How many millilitres of water can the box hold? (1)

6.1.3 Calculate the total surface area of the box. (2)

6.2 A closed cube has edges of 7 cm.

6.2.1 Calculate the volume of the cube. (1)

6.2.2 Calculate the total surface area of the cube. (2)

6.3 A water tank holds 2,5 m^3 of water. How many litres is this? (1)

6.4 A container in the shape of a cube holds exactly 64 litres of water when it is full. Calculate the area of the material needed to make the closed container. (2)

6.5 A rectangular container has a base of 30 cm by 20 cm. It holds exactly 18 litres of water when it is full. Calculate its height. (2)

[12]

QUESTION 7

7.1 For each survey below, state whether the people who are asked form a sample or a population.

7.1.1 A school asks EVERY Grade 8 learner which sport they enjoy most. (1)

7.1.2 A shop with 2 000 customers asks 50 of them about its service. (1)

7.2 The number of push-ups that 13 learners did in one minute is given below.

12 ; 25 ; 18 ; 31 ; 25 ; 9 ; 22 ; 25 ; 14 ; 30 ; 27 ; 19 ; 16

7.2.1 Organise the data in a stem-and-leaf display. (2)

7.2.2 Write down the mode. (1)

7.2.3 Determine the median. (2)

7.2.4 Calculate the mean. (2)

7.2.5 Calculate the range. (1)

7.3 The test marks (out of 60) of 10 learners are given below.

$$42\ ;\ 37\ ;\ 51\ ;\ 48\ ;\ 37\ ;\ 29\ ;\ 55\ ;\ 44\ ;\ 37\ ;\ 50$$

7.3.1 Organise the data in a stem-and-leaf display. (2)

7.3.2 Write down the mode. (1)

7.3.3 Determine the median. (2)

7.3.4 Calculate the mean. (2)

7.3.5 Calculate the range. (1)

7.4 A box contains 6 yellow, 4 white and 2 black counters. A counter is taken out of the box at random.

7.4.1 Determine the probability that the counter is white. (1)

7.4.2 Determine the probability that the counter is NOT yellow. (1)

7.4.3 How many black counters must be added to the box so that the probability of taking out a black counter is $\frac{1}{2}$? (2)

7.5 The letters of the word MATHEMATICS are written on 11 cards, one letter on each card. One card is chosen at random.

7.5.1 Determine the probability that the card shows the letter M. (1)

7.5.2 Determine the probability that the card shows a vowel. (1)

7.6 A bag contains 2 red and 8 blue sweets. How many red sweets must be added to the bag so that the probability of taking out a red sweet is $\frac{1}{3}$? (2)

[26]

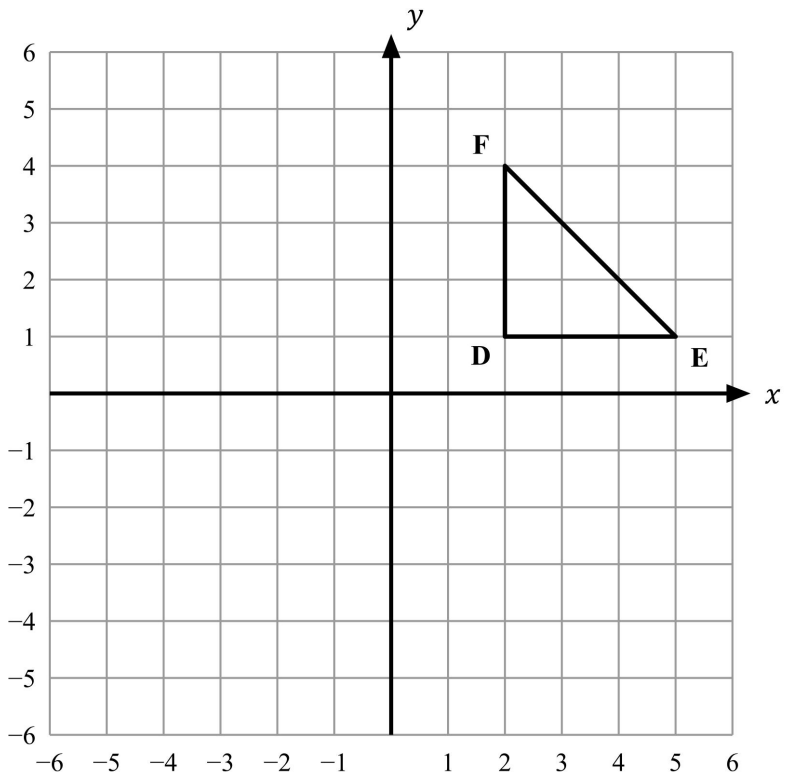
TOTAL: 145

ANNEXURE

Write your name on this ANNEXURE and keep it with your worksheet.

NAME: _____ CLASS: _____

QUESTION 4.1 (GRID A) (2)



QUESTION 4.4 (GRID B) (2)

