

Coonabarabran High School

NAME: _____



YEAR 9 MATHEMATICS

Term 3 Assessment Task

Take Home Task 2020

Measurement and Money

Task 1: Measurement Task

Section 1: Perimeter and Area

Section 2: Surface Area and Volume

Task 2: Chicken Run

Task 3: Money

Task 4: Think of a Number

20% of Yearly Assessment

Date Due: Friday 14th August 2020 (Week 4) Period 2

Instructions:

- Time allowed: 2 weeks.
- Attempt all questions.
- Show all necessary working.
- Write neatly – untidy/messy work will not be marked.
- Hand in all paper work (with your name at the top)

3. Sketch three (3) more plane shapes with the SAME PERIMETER as Shape 1 (using a ruler and a pencil).
Show with FULL working the perimeter of each of these shapes.

4. Calculate the AREA of Shape 1. Show FULL working.

5. Sketch three (3) more plane shapes with the SAME AREA as Shape 1.
Show with FULL working the area of each of these shapes.

SECTION 2: Volume and Surface Area

6. Draw a neat diagram of a rectangular prism, using ruler and pencil.

Choose the dimensions of your prism, and indicate these on your diagram (NOTE: these dimensions do not need to be accurate).

This is "Shape 2"

7. Calculate the VOLUME of Shape 2. Show FULL working.

8. Sketch three (3) more solid shapes with the SAME VOLUME as Shape 2 (using as ruler and a pencil).

Show with FULL working the volume of each of these shapes.

9. Calculate the SURFACE AREA to Shape 2.
Show FULL working.

10. Sketch one more solid shape with the SAME SURFACE AREA as
Shape 2.
Show with FULL working the surface area of your shape.

Task 2: Chicken Run

A farmer has 36 metres of wire netting to make a fence for his chickens.

What would be the dimensions of the chicken run that would give the chickens the greatest area for exercise?

Show all your working out with labelled diagrams and reasoning.

If each chicken requires at least 3 square metres to be a happy and productive chicken, how many chickens would be able to fit in this chicken run?

Extension:

The farmer's wife sees a better way to fence in the chickens. She suggests using an existing wall of the tractor shed for one side of his chicken run.

What will be the area of the best chicken run now?

How many chickens could now be kept?

Show all your working out.

TASK 3: MONEY

Cassie found some coins in her pocket. She had only 50 cent, 20 cent, 10 cent and 5 cent coins but she had at least one of each coin.

Altogether she had \$2.00 in her pocket.

1. Can you show five different ways that Cassie could have \$2.00 in her pocket?

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2. What if Cassie had nine coins in her pocket – what could the coins have been?

3. Cassie needs to give her brother exactly 45 cents. **Using your answer to question 2**, would she be able to give him the money? How do you know this?

TASK 4: THINK OF A NUMBER

Follow the instructions using a number of your choice and demonstrate the mathematical calculations required to obtain an answer.

Think of a number:

Multiply it by 3:

Add 5:

Subtract the number you first thought of:

Subtract 3:

Factorise:

Divide by 2:

Subtract 1:

ANSWER:

Follow the instructions for a pronumeral of your choice and demonstrate the mathematical calculations required to obtain an answer.

Think of a number:

Multiply it by 3:

Add 5:

Subtract the number you first thought of:

Subtract 3:

Factorise:

Divide by 2:

Subtract 1:

ANSWER:

Section 2: The 1-2-3-4 Problem

For this problem, a 1-2-3-4 expression is any expression written using each of these digits exactly once, according to the following rules:

- You may use any of the four basic arithmetic operations: additions, subtractions, multiplication and division (according to the order of operation rules). Eg. $2+1\times 3-4$ is a 1-2-3-4 expression for the number 1 ($2 + 1 \times 3 - 4 = 1$)
- You may use powers. Eg. 3^2-4-1 is a 1-2-3-4 expression for the number 4.
- You may use square roots.
- You may use factorials (if you don't know what this is either look it up or don't use factorials!)
- You may juxtapose two or more digits (that is, put them next to each other) to form a number such as 12. Eg. $43-12$ is a 1-2-3-4 expression for the number 31.
- You may use parentheses and brackets to change the meaning of an expression. Eg. According to the rules for order of operations, $1+4\times 3^2$ is a 1-2-3-4 expression for the number 37. You can add parentheses and brackets to get $[(1+4)\times 3]^2$, which is a 1-2-3-4 expression for the number 225.

Your task in this problem is to create as many 1-2-3-4 expressions as you can for each of the numbers from 1 to 25. Minimum amount of 1-2-3-4 expressions is 25 (find 1-2-3-4 expressions for numbers 1-25). REMEMBER: In every case the expression must use each of the digits 1, 2, 3, and 4 *exactly once*.

Write UP

1. *Problem statement*
2. *Process*: Describe how you went about solving the problem. Which numbers did you find first?
3. *Solution*: List the numbers from 1 to 25, giving at least one 1-2-3-4 expression for each. If you got more than one expression for a given number, show as many as you found.
4. *Extension*: come up with some variations on this problem.
5. *Evaluation*.