basic education

Department:
Basic Education
**REPUBLIC OF SOUTH AFRICA**

# ANNUAL NATIONAL ASSESSMENT

# GRADE 5

# MATHEMATICS

# SET 1: 2012 EXEMPLAR

# GUIDELINES FOR THE USE OF ANA EXEMPLARS

## 1. General overview

The Annual National Assessment (ANA) is a summative assessment of the knowledge and skills that learners are expected to have developed by the end of each of the Grades 1 to 6 and 9. To support their school-based assessments and also ensure that learners gain the necessary confidence to participate with success in external assessments, panels of educators and subject specialists developed exemplar test questions that teachers can use in their Language and Mathematics lessons. The exemplar test questions were developed based on the curriculum that covers terms 1, 2 and 3 of the school year and a complete ANA model test for each grade has been provided. The exemplars, which include the ANA model test, supplement the school-based assessment that learners must undergo on a continuous basis and does not replace the school based assessment.

## 2. The structure of the exemplar questions

The exemplars are designed to illustrate different techniques or styles of assessing the same skills and/or knowledge. For instance, specific content knowledge or a skill can be assessed through a multiple-choice question (where learners select the best answer from the given options) or a statement (that requires learners to write a short answer or a paragraph) or other types of questions (asking learners to join given words/statements with lines, to complete given sentences or patterns, to show their answers with drawings or sketches, etc.). Therefore, teachers will find a number of exemplar questions that are structured differently but are targeting the same specific content and skill. Exposure to a wide variety of questioning techniques or styles gives learners the necessary confidence to respond to different test items.

## 3. Links with other learning and teaching resource materials

For the necessary integration, some of the exemplar texts and questions have been deliberately linked to the grade-relevant workbooks. The exemplars have also been aligned with the requirements of the National Curriculum Statement (NCS), Grades R to 12, the Curriculum and Assessment Policy Statements (CAPS) for the relevant grades and the National Protocol for Assessment. These documents, together with any other that a school may provide, will constitute a rich resource base to help teachers in planning lessons and conducting formal assessment.

## 4. How to use the exemplars

While the exemplars for a grade and a subject have been compiled into one comprehensive set, the learner does not have to respond to the whole set in one sitting. The teacher should select exemplar questions that are relevant to the planned lesson at any given time. Carefully selected individual exemplar test questions, or a manageable group of questions, can be used at different stages of the teaching and learning process as follows:

4.1 At the beginning of a lesson as a diagnostic test to identify learner strengths and weaknesses. The **diagnosis** must lead to prompt **feedback** to learners and the development of **appropriate lessons** that address the identified weaknesses and consolidate the strengths. The diagnostic test could be given as homework to save instructional time in class.

4.2 During the lesson as short formative tests to assess whether learners are developing the intended knowledge and skills as the lesson progresses and ensure that no learner is left behind.

4.3 At the completion of a lesson or series of lessons as a summative test to assess if the learners have gained adequate understanding and can apply the knowledge and skills acquired in the completed lesson(s). Feedback to learners must be given promptly while the teacher decides on

whether there are areas of the lesson(s) that need to be revisited to consolidate particular knowledge and skills.

4.4    At all stages to expose learners to different techniques of assessing or questioning, e.g. how to answer multiple-choice (MC) questions, open-ended (OE) or free-response (FR) questions, short-answer questions, etc.

While diagnostic and formative tests may be shorter in terms of the number of questions included, the summative test will include relatively more questions, depending on the work that has been covered at a particular point in time. It is important to ensure that learners eventually get sufficient practice in responding to full tests of the type of the ANA model test.

## 5.    Memoranda or marking guidelines

A typical example of the expected responses (marking guidelines) has been given for each exemplar test question and for the ANA model test. Teachers must bear in mind that the marking guidelines can in no way be exhaustive. They can only provide broad principles of expected responses and teachers must interrogate and reward acceptable options and variations of the acceptable response(s) given by learners.

## 6.    Curriculum coverage

It is extremely critical that the curriculum must be covered in full in every class. The exemplars for each grade and subject do not represent the entire curriculum. They merely **sample** important knowledge and skills and covers work relating to terms 1, 2 and 3 of the school year. The pacing of work to be covered according to the school terms is specified in the relevant CAPS documents.

## 7.    Conclusion

The goal of the Department is to improve the levels and quality of learner performance in the critical foundational skills of literacy and numeracy. ANA is one instrument the Department uses to monitor whether learner performance is improving. Districts and schools are expected to support teachers and provide necessary resources to improve the effectiveness of teaching and learning in the schools. By using the ANA exemplars as part of their teaching resources, teachers will help learners become familiar with different styles and techniques of assessing. With proper use, the exemplars should help learners acquire appropriate knowledge and develop relevant skills to learn effectively and perform better in subsequent ANA tests.

1.    **Recognise and represent whole numbers to at least 6 digits**

1.1    Fill in the missing number.

4 210 ; 4 207 ; 4 204 ; _____ ; 4 198                     (1)

1.2    Write down the next 2 numbers in the sequence and state the rule

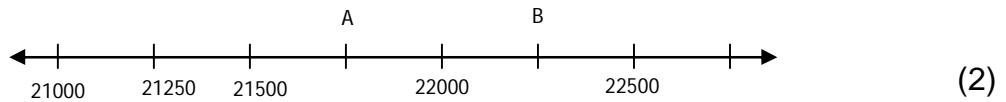used to find the number.

697 ; 699 ; 701 ; 703 ; _____ ; _____                  (2)

1.3    Write down the multiples of three from 474 to 483.         (1)

1.4    Write down the multiples of 5 between 718 and 733.        (1)

1.5    Complete: 5 720 is 100 less than _____                  (1)

1.6    Fill in the numbers represented by A and B on the number line.



(2)

2.

2.1    Which number is represented by:

40 000 + 2 000 + 5 + 60 + 700?                             (1)

2.2    Mark the number in the frame that represents:

Six hundred and twenty three thousand nine hundred and two

| 662 922 | 623 902 | 632 209 |
|---------|---------|---------|
| 692 023 | 623 209 | 623 920 |

(1)

2.3    Write each of the following numbers in words.

a.  42 749

b.  348 706                                                (2)

2.4    Three hundred and forty eight thousand seven hundred and thirty

six written using digits is _____     (1)

2.5    Arrange the following numbers from smallest to biggest.

36 589 , 35 698 , 38 569 , 39 958                          (1)

2.6     Write down the biggest number and the smallest number that can
        be made using the digits   5, 9, 6 , 1 , 7 , 2 each only once.          (2)

3.

3.1     Calculate:

        a.   23 + 0                              b.  23 − 0
        c.   25 625 − 25625                      d.  1298 − 0                    (4)

3.2     a.  What happens to a number when zero is added to it?
        b.  What happens to a number when you subtract a number from
            itself?                                                             (3)
        c.  What happens to a number when you subtract zero from it?

3.3     Calculate:

        a.  1 x 1 x 1                            b.  3 x 0 x 3                   (2)

3.4     a.  What happens to a number when you multiply it by 1?
        b.  What is the product of a number and zero?                          (2)

4.

4.1     Is 36 + 24 equal to 24 + 36?                                            (1)
4.2     If 17 x 3 = 51 what does 3 x 17 equal?                                  (1)

4.3     Complete:

        2(5+3) = (2x_____)  + (2 x _____)

              = _____  + _____

              =  16                                                             (3)

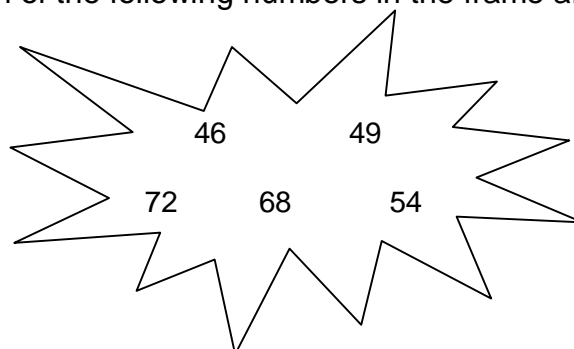4.4     Is 9÷3 equal to 3 ÷9?                                                   (1)

5.

5.1     Which of the numbers 1, 6, 9, 7, 8 is a factor of 21?                   (2)
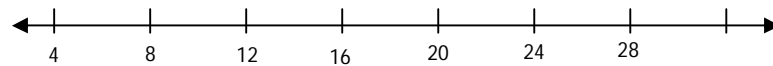
5.2     Which of the following numbers in the frame are multiples of 3?



46      49
72      68      54

                                                                                (2)

5.3    Circle the multiples of 8 shown on the number line.



| 4 | 8 | 12 | 16 | 20 | 24 | 28 |

(3)

## 6.    **Odd and even numbers**

6.1    _____ is the next odd number after 5335.    (1)

6.2    The even number just before 2846 is _____    (1)

6.3    What is the biggest odd number you can make with   1 , 3 , 5 , 6 ,    (1)
6.4    2?    (1)

       Arrange the digits 4 , 1 , 6 , 7 to make the smallest even number.

## 7.    **Place value**

7.1    Draw an abacus to represent 79 342.    (1)

7.2    Which number is represented by:

       (4 x 10) + (2 x 10 000) + (5 x 1) + (3 x 100) + (6 x 1000)?    (1)

7.3    Which number is missing?

       33 413 = 30 000 + _____ + 3 + 400 + 10    (1)

7.4    What is the value of the underlined digit in the number   97 4̲06?    (1)

7.5    Write 3 742 in expanded notation.    (1)

## 8.    **Common fractions and decimal fractions**

8.1    Look at the containers and then answer the questions.
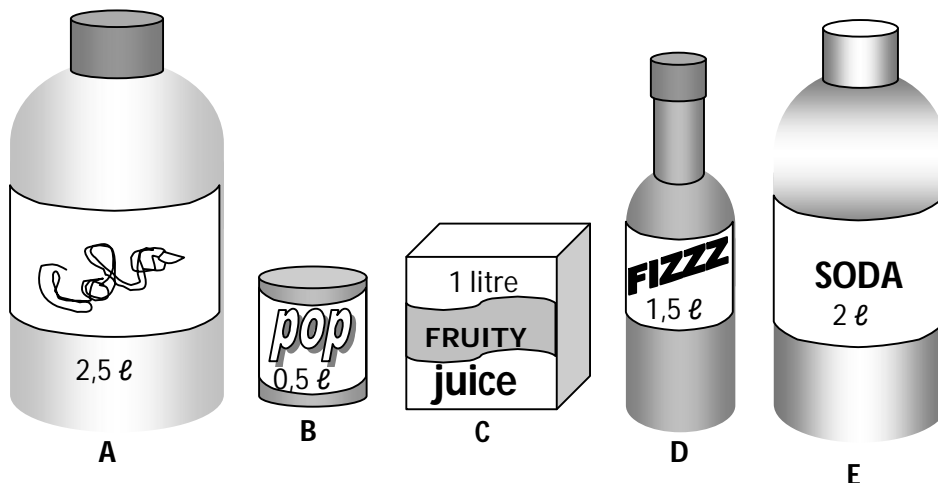


a.  Which container holds between $\frac{1}{2}$ litre and 1,5 litres?

b.  Which container holds less than 1 litre?

c.  How many Pop cans will you need to fill the soda bottle?    (3)

8.2 Use the fraction strips to answer the questions.



a. Fill in $>$ , $<$ , $=$ to make correct statements.

(i) $\dfrac{1}{4}$ ☐ $\dfrac{3}{4}$ (1)

(ii) $\dfrac{4}{8}$ ☐ $\dfrac{2}{4}$ (1)

b. Write down 2 fractions that are smaller than $\dfrac{1}{2}$ . (2)

c. Write down one fraction that is bigger than $\dfrac{3}{4}$ . (1)

d. Which fractions are equal to $\dfrac{2}{4}$ ? (2)
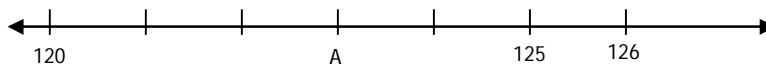
8.3 Write down the fourth term in the sequence.
$\dfrac{9}{11}$ ; $\dfrac{7}{11}$ ; $\dfrac{5}{11}$ ; ……… (1)

8.4 Which fraction comes next in the given sequence?

$\dfrac{2}{12}$ ; $\dfrac{5}{12}$ ; $\dfrac{8}{12}$ ; …………… (1)

9. **Rounding off to the nearest 5, 10, 100, 1 000**

9.1 Use the number line to answer the following questions.



a. Is A closer to 120 or 125?

b. 126 rounded off to the nearest 10 $\approx$ _____. (2)

9.2    Answer the following questions and give a reason for your answer.

    a.  74 rounded off to the nearest 10 ≈ _____

    b.   3 097 rounded off to the nearest 1 000 ≈ _____          (2)

9.3    Round each amount off to the nearest rand.

    a.  R53,64      ≈          _____

    b.  R6 348, 35 ≈          _____                          (2)

## 10.    Add and Subtract whole numbers

10.1    Fill in the missing number.

3 576 + _____ = 6 892                                          (2)

10.2    Calculate   1 673 + 374.                                      (2)

10.3    Find the sum of 3624 and 2304.                                (2)

10.4    Ann is a flower seller. Today she sold 1 403 flowers and yesterday she sold
2 364 flowers. How many more flowers did she sell yesterday than today?    (3)

10.5    Sandile sells beads at the craft market. The table shows how many beads she
sold during a 5-day festival.

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| 1 213 | 643 | 812 | 417 | 2068 |

    a.  How many beads did she sell altogether on Monday, Tuesday and
Wednesday?                                                          (3)

    b.  How many more beads did she sell on Friday than on Wednesday?    (3)

## 11.    Common fractions

11.1    Answer the following questions, a. to f., by calculating.

    a.  $\dfrac{5}{6} + \dfrac{1}{6}$                                  (1)

    b.  $\dfrac{8}{11} - \dfrac{3}{11}$                               (1)

    c.  $3\dfrac{2}{5} + 5\dfrac{3}{5}$                               (2)

    d.  $9\dfrac{3}{12} - 1\dfrac{4}{12}$                             (2)

7

e. $\dfrac{1}{6}$ of 24 (2)

f. $\dfrac{2}{5}$ of R30 (3)

11.2 Mum baked a cake and cut it into 8 equal parts. Dad had 3 pieces. You had 1 piece. What fraction of the cake is left? (3)

11.3 At the Moses Mabhida Stadium in Durban, $\dfrac{1}{3}$ of the 630 parking bays have been reserved for officials. How many parking bays are left for the public? (4)

12. **Multiplication**

12.1 Answer the following questions by calculating.

a. 5 x 20 (1)

b 6 x 400 (1)

c. __ x 3 000 =15 000 (1)

d. 5 487 x 62 (3)

12.2 Complete:

562 x 5

=(500 +__+ 2) x 5

=(500 x___) + (60 x ___) + (___ x 2)

=_____

= _____ (4)

12.3 Use the distributive method to calculate 373 x 26. (4)

12.4 Write down all the factors of 54. (2)

12.5 Use the factor method to calculate 237 x 42. (3)

13. **Division**

13.1 Use the factor method to calculate 728 ÷ 28. (3)

13.2 Calculate 289 ÷ 17. (2)

13.3 Calculate the quotient.

$21\overline{)735}$ (3)

13.4 Use 2 different methods to divide 805 by 35. (3)

14. **Properties of numbers**

14.1 State whether the statements are TRUE OR FALSE

a. 7 x 3 + 6 = 3 + 7 x 6 _____

b. 3(5 +6) = (3 x 5) + (3 x 6) _____

c. 51 + 22 = 22 + 51 _____

d. 24 ÷ 5 = 5 ÷ 24 _____

e. 61 x 0 = 610 x 0 _____ (5)

14.2 Complete:
a. 9 + 2 = 2 + ___

b. 7 + 1 = ___ + 7

c. ___ x 4 = 4 x 6

d. 8 x ___ = 5 x ____ (4)

14.3 Complete:

a. 2 x (3 x 4) = (2 x 3) x (___)

b. 1 + ( 3 + 5) = (1 + 3) + (___)

c. 6 x (2 + 4) = (6 x 2) + ( _____) (3)

15. **Ratio and Rate**

15.1 What is the ratio of the number of boys to the number of girls in your class? (1)

15.2 To make cooldrink I add 2 litres concentrate to 4 litres of water, means I have
mixed the concentrate and water in the ratio _____ . (1)

15.3 1 litre of juice costs R12,50.
How much will you pay for 8 litres of the same juice? (3)

15.4 If 5 kg of sugar costs R40 what is the price per kg? (2)

15.5 Divide 200 objects into 5 equal groups. (1)

15.6 Share 300 apples equally amongst 20 people. (2)

15.7    Below is a list of the income and expenditure per month for Mr & Mrs Moeng.

| Mr Moeng's salary | R10 200 | Clothing | R1 847 |
| Mrs Moeng's salary | R7 500 | Transport | R1 280 |
| Rental income | R2 150 | Food | R2 624 |

     a.   What is their total income for one month?                                      (2)

     b.   What is their total expenditure?                                               (2)

     c.   How much money do they have left at the end of every month?                    (2)

## 16.    **Numeric and Geometric patterns**

16.1    Extend the following patterns:

     a.   25; 50; 75 ___; ___ .

     b.   1994; 1998; 2002; _____; _____ .

     c.   99; 94; 89; ____; _____ .                                                     (3)

16.2    Identify the rule in each pattern.

     a.   21; 26; 31;

     b.   56;  49;  42; ………                                                              (2)

16.3    Describe the relationship between the numbers in the top row and the bottom row in each table.

| $x$ | 1 | 2 | 3 | 4 |
| $y$ | 3 | 5 | 7 | 9 |

| $x$ | 1 | 2 | 3 | 4 |
| $y$ | 5 | 6 | 7 | 8 |

(2)

16.4    Complete the pattern**:**



.                                                                                (1)

16.5    Make two of your own patterns.                                                  (2)

17. **Flow diagram and number sentences**

17.1 Complete the following flow diagrams.

a.

| Input | Rule | Output |
|---|---|---|
| 15 | x 3 | __ |
| 20 | | __ |
| 25 | | __ |

b.

| Input | Rule | | Output |
|---|---|---|---|
| 15 | ÷ 5 | - 3 | __ |
| 30 | | | __ |
| 45 | | | __ |
| 60 | | | __ |
| 75 | | | __ |
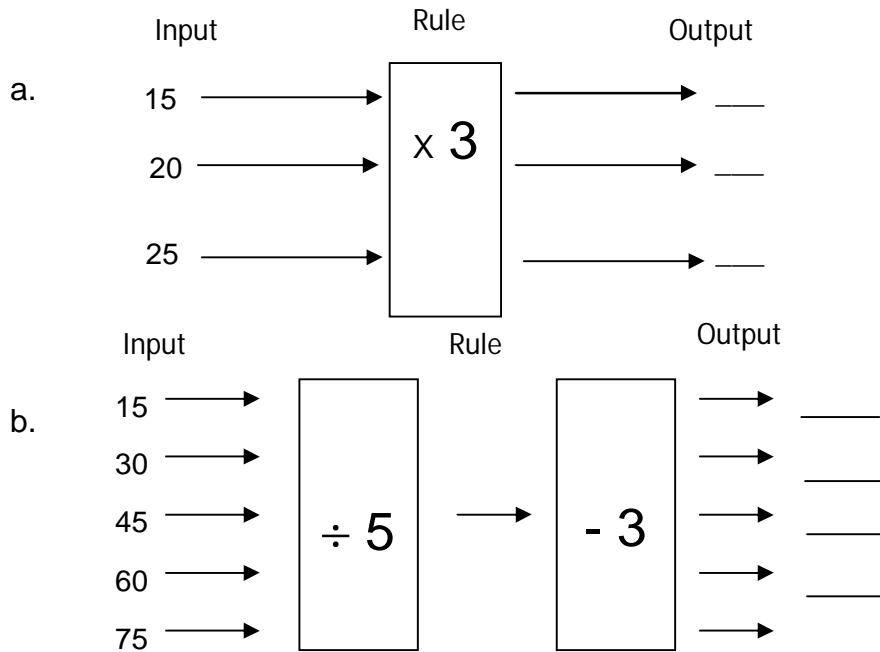
(8)

17.2 Write a number sentence for each of the following:

a. There are 5 boys and 23 girls in a class. How many learners in the class?

b. A mum buys 3 dozen sweets for her two kids. She decides to give 4 sweets to dad and then shares the rest equally between the two kids. How many sweets does each child get?

c. There are 20 handbags with 5 lipsticks in each bag. How many lipsticks are there altogether?

d. The sum of four numbers is 20500. Three of the numbers are 2341, 578 and 10690. What is the fourth number? (4)

17.3 Write a number sentence and then calculate the answer.
Mrs Mashile bought world cup tickets for 29 soccer matches for herself and her husband at R160 each. How much did the tickets cost? (4)
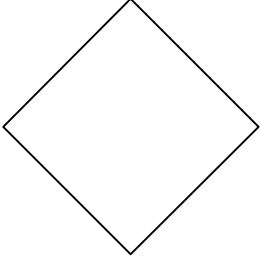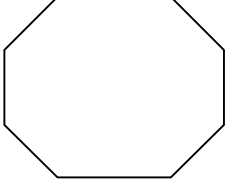
17.4 Write down the rule used in the flow diagram.

| 48 | | 8 |
|---|---|---|
| 36 | | 6 |
| 24 | | 4 |

(1)
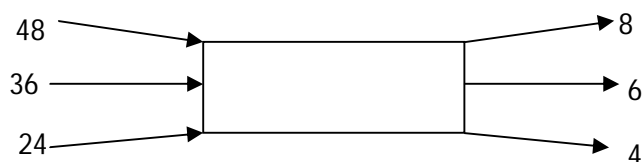
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18. **2-D shapes, 3-D objects, symmetry and transformations**

18.1    Complete the table.

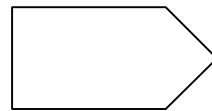| Shape | Name of shape | Number of sides | Number of angles |
|-------|---------------|-----------------|------------------|
|  | | | |
|  | | | |

(6)

18.2    Write down how many right angles there are in each of the shapes.

a.
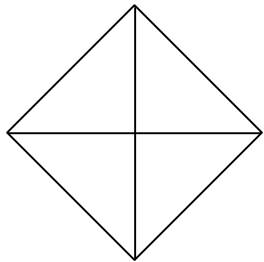


b.



_____        _____        (2)

18.3
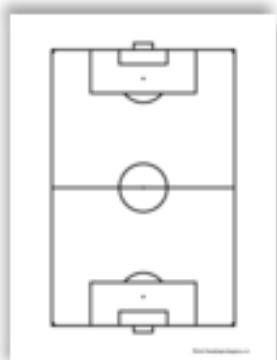


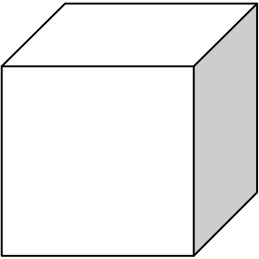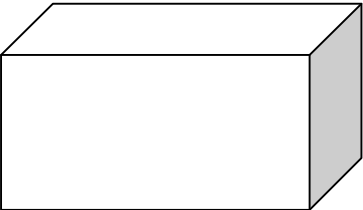How many rectangles are there on the diagram of the soccer field?        (1)

_____

18.4



Name the 2-D shapes on the soccer ball. (2)

18.5

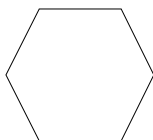| 3-D object | Name of 3-D object | The name(s) of the shape(s) of the faces |
|---|---|---|
|  | | |
|  | | |

(4)

19.

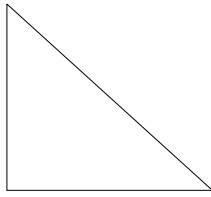19.1 Draw all the lines of symmetry in the shape.
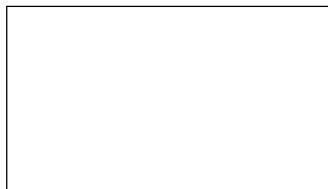


(2)

19.2



How many lines of symmetry does the above shape have? (1)

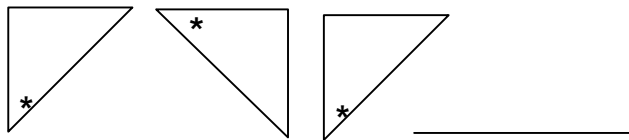19.3    Draw a line of symmetry in the triangle.

(1)

20.

20.1    Match the words in column B with the words in column A.

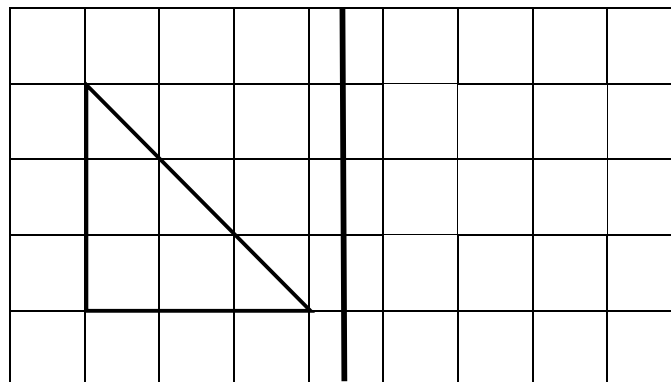| COLUMN A | COLUMN B |
|---|---|
| 20.1   Rotate | a.   slide |
| 20.2   Translate | b.   flip |
| 20.3   Reflect | c.   turn |

(3)

20.2    Draw the next figure that follows in the space provided.

(1)

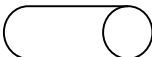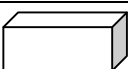20.3    Reflect the shape about the dark vertical line.

(1)

21. **Views and grid positions**

21.1 Use a dot to mark the position of the points   A4,   A1,   C1,   G3 and D2 on the grid.

|   | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 |   |   |   |   |   |   |   |
| 2 |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   |   |   |
| 4 |   |   |   |   |   |   |   |

(5)

21.2 Figures and shapes are placed on a grid. Answer the questions that follow.

|   | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 |   |   | △ |   |   |
| 2 |   |   |   |   | ◻ |
| 3 |   | ⬭ |   | ▭ |   |
| 4 | ⏢ |   |   |   |   |
| 5 |   |   | ▱ |   |   |

a.    Name the object in

C5: _____

E2:_____

b.    Give the position of the

Triangle:      _____

Rectangle:    _____

(4)

21.3


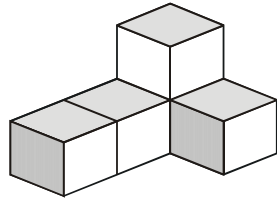
Left →  [object]  ← Right

↑
Front
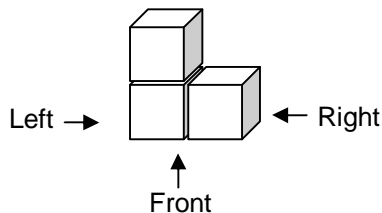
a.   Draw the view of the object from the right.

b.   Draw the view of the object from the back.
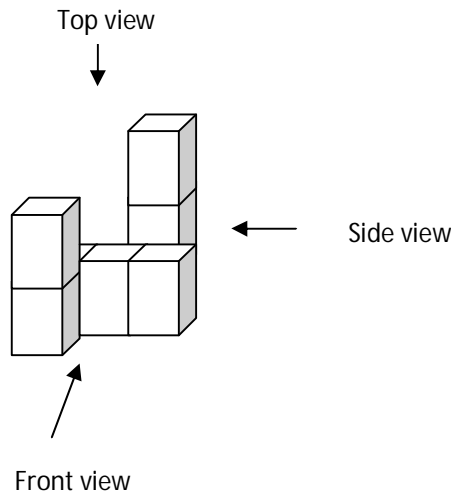
c.   Draw the view of the object from the top.

(3)

21.4    Draw the view of the 3-D object from the top.



(1)

21.5    Draw the side view of the following shape.

Top view



Side view

Front view                                                                                          (1)

22.     **Measurement**

22.1    Complete the table:

| NUMBER OF | | | |
|-----------|---------|---------|--------|
| **YEARS** | **CENTURY** | **DECADES** | **MONTHS** |
| e.g.  100 | 1 | 10 | 1 200 |
| 50 | | | |
| 25 | | | |
| 75 | | | |

(9)

22.2    Write each 24-hour time in analogue time.

a.    06:00

b.    21:30

c.    23:15                                                                                         (3)

22.3    Write each of the following in 24-hour time.

a.    Quarter past 5 in the evening.

b.    Quarter to 8 in the evening.

c.    Half past 2 in the morning.                                                                   (3)

22.4

| 19:10 |
|---|

Write the digital time, shown above, as analogue time _____.      (1)

22.5    Add:                              Subtract:

4 weeks  2d                    13h 44min

9 weeks   3d                     9h 35 min

_____                _____                (2)

23.

23.1    Choose the appropriate unit of measurement in each case.

| Item | (m, cm, kg,  mℓ , km, mm, ℓ) |
|---|---|
| Distance from Cape Town to East London |  |
| Finger nail |  |
| Bag of cement |  |
| Cup of tea |  |

(4)

23.2    Edward sold 4 002 litres of paraffin in January, 98 000 millilitres of paraffin in
February and 1, 703 kilolitres of paraffin in March. How many litres of paraffin
did he sell altogether?      (4)

23.3    Shade in the blocks in the table that give the total mass of the pumpkin.

| 2 kg |
|---|

| 0,5 kg | 250 g | 200 g |
|---|---|---|
| 0,25 kg | 600 g | 400 g |

(2)

23.4    The length of my scarf is 2 metres. How long is it in centimetres?      (1)
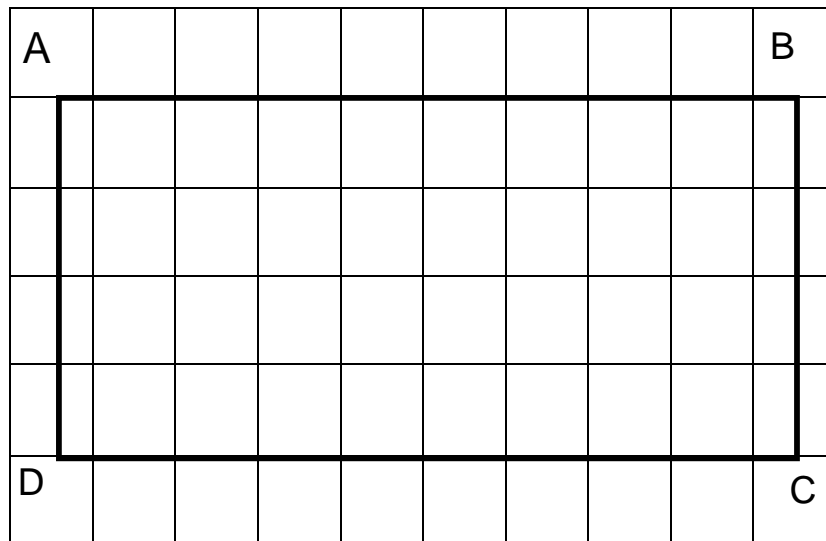
23.5    Which of the following temperatures would you consider as very cold?

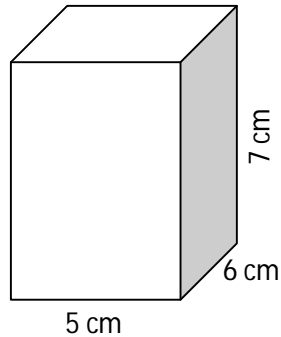2°C      12 °C      22 °C      (1)

17

24.

24.1    Rectangle ABCD is placed on a grid where 1 block = 1 cm x 1cm.



   a.    Write down the length of AB and BC.                                      (1)

   b.    Calculate the area of the rectangle ABCD.                               (4)

24.2    Calculate the volume of a cube if the length of each face is 6 cm.        (3)

24.3    Calculate the volume of the prism below:



                                                                                 (3)

## 25.    Data handling

25.1    Shereen asked each learner in her class what their favourite ice cream flavour
        was. She recorded the results in a table. Draw a bar graph to illustrate the
        data.

| Ice cream flavours | Number of learners |
| --- | --- |
| Vanilla | 12 |
| Chocolate | 9 |
| Strawberry | 6 |
| Lime | 3 |

                                                                                 (3)

25.2 There are 50 learners in a class. They are working to improve their school environment.

- 17 are doing waste management
- 10 are making a vegetable garden
- 12 are planting trees
- 11 are responsible for water conservation

Complete the frequency table.

| Environmental issue | Tally marks | Frequency |
|---|---|---|
| Waste management | | 17 |
| Vegetable garden | | 10 |
| Planting of tree | | 12 |
| Water conservation | | 11 |

(4)

25.3 The following is a tally chart of soccer teams supported by the Grade 6A learners during the world cup 2010. The total number of Grade 6 learners in the school is 150.

Complete the frequency table.

| Teams | Tally marks | Frequency |
|---|---|---|
| South Africa | HHL  HHL  II | 12 |
| Ghana | | 9 |
| Brazil | HHL  HHL  I | |
| Spain | | 4 |
| Argentina | HHL | |

a. Write down the mode of the data set.

b. What is the ratio of the number of the grade 6A learners to that of the grade 6 population? (6)

26.    **Probability**

26.1    Fill in a, b, c or d in the correct column to match the sentence with the probability.

     a.    The sun will shine tomorrow.

     b.    I can jump as high as the moon.

     c.    The children in grade 5 will never grow.

     d.    Exercise makes you fit.

| Impossible | Certain |
|---|---|
| | |
| | |
| | |
| | |
| | |

(4)

26.2    You have a bag that contains a 50c, a 20c, a R1 and a R2 coin.

Circle the correct answer.

Your chance of picking a R1 coin is:

a. Possible

b. Certain

c. Impossible (1)

26.3    What are the chances of throwing a 2 on a dice? (1)