basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ANNUAL NATIONAL ASSESSMENT

GRADE 4

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.

**Count forward and backwards in whole numbers between 0 and at least 10 000**
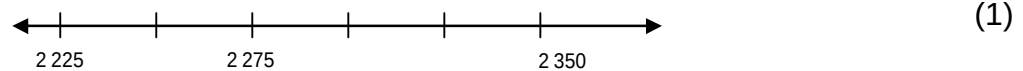
1.   Fill in the missing numbers.

   a.   3 050 ; 3 075 ; 3 100 ; _____; _____;_____.   (2)
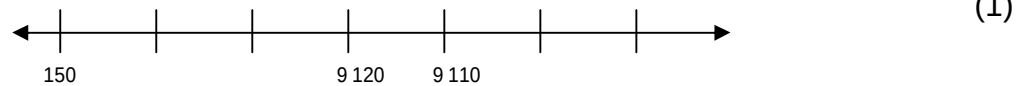
   b.   7 050; 7 000; 6 950; _____; _____;_____; 6 750.   (2)

2.   Fill in the missing numbers on the number line.
   a.

2 225   2 275   2 350
(1)

   b.

150   9 120   9 110
(1)

3.   Write down the next 4 numbers in each sequence.

   a.   930 ; 933 ; 936 ; _____; _____; _____; _____.   (2)

   b.   4 884 ; 4 882 ; 4 880 ; _____; _____;_____;_____.   (2)

4.   Complete the following number chains.

      +3   +3   +5   +5

   a.   516   →_____ → _____→   _____⟹   ____   (2)

      -2   -2   -10   -10

   b.   8 224   →_____ → _____→   _____→_____   (2)

5.   Which number is written in expanded notation as

   (4 x 1 000) + (5 x 100) + (8 x 10) + (2 x 1)?   (1)
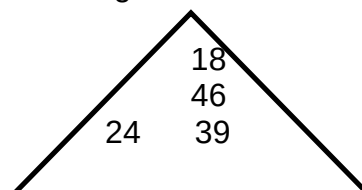
6.   Use digits to write down each number.
   a.   four thousand, eight hundred and thirteen   (1)
   b.   six thousand and sixteen   (1)
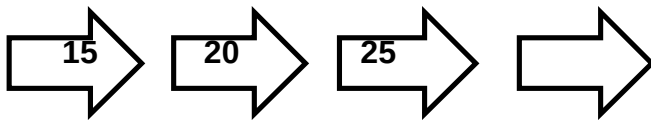
7.   Write 5 018 in words.   (1)

8. Write 6 438 in expanded notation. (1)

9. Arrange the following numbers from biggest to smallest.

   4 810 , 8 410 , 4 180 , 8 140 (1)

10. What is the biggest number you can make using the digits

    6   0   5   9 ? (1)

11. What is the value of the underlined digit in 4 6̲14? (1)

12. a. Which whole number comes just before 5 646? (1)

    b. Which whole number comes directly after 6 789? (1)

13. Complete

    4 869 = (4 x _____)+(_____ x 100)+(6 x _____) + (___ x 1)

         or 4 000 + _____+ _____+_____

         or 4 x 10 x 10 x 10 + _____ + _____ + _____ (5)

14. Use the given multiplication sentence to write 2 division sentences.

    9 x 4 = 36 (2)

15. Complete ...

    if 9 x 8 = 72   then _____ x 9 =72 (1)

16. Is 54 + 29   equal to 29 + 54? (1)

17. Say whether the following is TRUE or FALSE.

    a. 67 – 45 is equal to 45 – 67 (1)

    b. 30 ÷ 5 is equal to 5 ÷ 30 (1)

18. Circle all the numbers in the triangle which are multiples of 3.

(1)
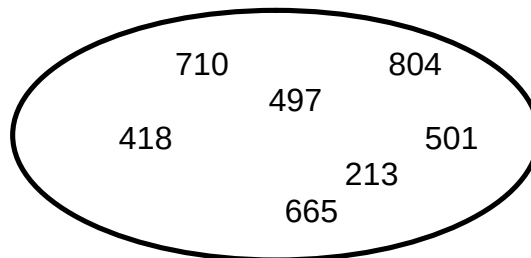
19.   Will I count the number 46 when counting in multiples of 6 up to

100? (1)

20.   Write down the first six multiples of 8. (1)

21.   Circle all the multiples of 7.

29, 35, 15, 67, 49 (1)

22.   What is the product of 7 and 5? (1)

23.   Write down all the multiples of 6 between 40 and 60. (1)

24.   Complete ...

14; 21; 28; 35 are all multiples of _____ (1)

25.   Which number comes in the next arrow?

(1)
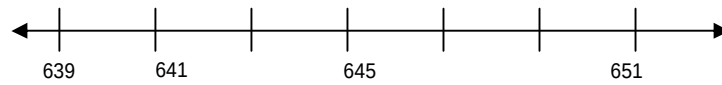
Odd and even numbers

1.   Complete the following sequences.

a. 4 102 ; 4 104 ; 4 106 ; _____; _____. (1)

b. 5 991; 5 989; 5 987; _____; _____; (1)

2.   Draw a triangle around all the odd numbers and a circle around all
the even numbers in the group.

(2)

3.   Complete ...

(1)

a. _____ is the next odd number after 419.

(1)

b. The even number which comes just before 67 is _____.

4.   Fill in the missing numbers on the number line.

639   641   645   651   (1)

5.   List all the odd numbers from 1 073 to 1 083.   (2)

Place value of whole numbers to at least 4 –digit numbers

1.   Give the value of the underlined digit in 7 694.   (1)

2.   Write each of the following numbers in the simplest numeric form.

    a. 5 000 + 300 + 20 + 1   (1)

    b. 2 Th + 3 T + 7 H + 2U   (1)

3.   Calculate the difference between the values of the underlined digits
         in 2 475 and 2 045.   (2)

4.   Fill in > or < to make correct sentences.

    a. 7 964 _____   7 946   (1)

    b. 3 010 _____ 3 110   (1)
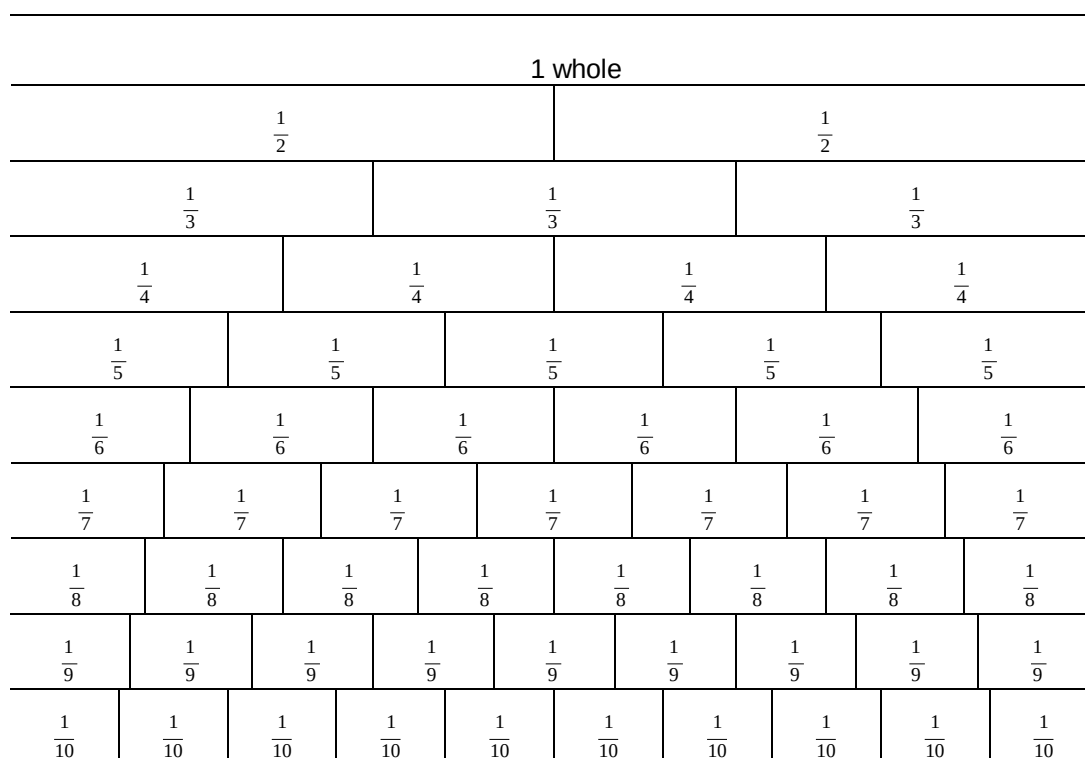
5.   Write down the number represented in the diagram.

Th	H	T	U
X			
X			
X	x		x
X	x		x

(1)

Common fractions and decimal fractions

1. Look at the fraction wall and then answer the questions.

1 whole									
$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{3}$			$\frac{1}{3}$			$\frac{1}{3}$			
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$			$\frac{1}{4}$		
$\frac{1}{5}$	$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		
$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$		$\frac{1}{6}$	$\frac{1}{6}$		$\frac{1}{6}$		
$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$	$\frac{1}{7}$			
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$		
$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	$\frac{1}{9}$	
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

a. Write the fractions below from smallest to biggest. (2)

$\frac{1}{5}$, $\frac{1}{10}$, $\frac{1}{2}$, $\frac{4}{10}$, $\frac{4}{5}$, $\frac{3}{10}$

b. How many quarters make a half? (1)

c. $\frac{2}{8}$ = _____. (1)

d. Shade $\frac{4}{6}$ on the fraction wall. (1)

2. Complete the following conversion table.

Common Fractions	Decimal Fractions
a._____	0,4
$\frac{1}{2}$	b._____
c._____	0,08

(3)

Round off to the nearest 10, 100 or 1 000

1. Complete ...

    4 948 rounded off to the nearest 10 ≈ _____.

    4 948 rounded off to the nearest 10 ≈ _____.

    4 948 rounded off to the nearest 10 ≈ _____. (3)

2. R 14,76 ≈ _____ rounded off to the nearest rand. (1)

    R 4,06 ≈ _____ rounded off to the nearest rand. (1)

3. Mrs Patel bought sweets for R13,99 and a packet of chips for R3,14.
    Calculate how much she spent correctly to the nearest rand. (2)

4. Is 1 758 closer to 1 700 or 1 800? (1)

Add and subtract whole numbers

1. Calculate:
    a. 3 846 + 3 217 (3)

    b. 2 752 + 4 356 (3)

2. Calculate 5 726 – 1 334. (2)

3. Write down the missing number.

    $\quad$ 4 2 6

    $-$_____

    $\underline{1\ 3\ 9\ 6}$ (2)

4. Calculate the difference between the value of the underlined digits in the
    numbers <u>9</u> 008 and 8 10<u>9</u>. (3)

Add and subtract common fractions

1. Lauren first eats $\frac{1}{8}$ of a chocolate cake before supper, and then eats
    another $\frac{1}{8}$ after supper.

    a. What fraction of the chocolate cake did she eat altogether? (2)
    b. What fraction of the chocolate cake was left? (2)

2. Complete ...

$\frac{3}{7} + \frac{2}{7} =$ _____ (1)

3. On Monday Ben picked one sixth of a kilogram of strawberries. On Tuesday he picked two sixths of a kilogram of strawberries. What is the total mass of the strawberries that Ben picked? (2)

4. Three fifths of the children at my party like chocolate ice-cream.How many of the 20 children at my party do not like chocolate ice-cream? (2)

5. What is $\frac{3}{4} + \frac{1}{4} - \frac{2}{4}$ equal to? (2)

6. Mum baked a cake and cut it into 6 equal pieces. Dad had 2 pieces. You had 1 piece. What fraction of the cake is left? (2)

Multiply 2-digit numbers by 2-digit numbers.

1. Write the repeated addition sum in shortened form. (1)

    5 + 5 + 5 + 5 + 5 + 5= _____ x 5 = _____

2. Use the break down method to calculate 46 x 32. (3)

3. Use the vertical method to calculate 24 x 64. (3)

4. Complete the sentence: 20 x 8 = _____ x 20 (1)

5. Tom wrote 12 sentences with 11 words in each, that means Tom wrote _____ words altogether? (2)

Divide 3-digit numbers by 1-digit numbers

1. I have to pack 296 apples into 8 boxes. How many apples will there be in a box if each box contains the same number of apples? (3)

2. If I share 123 sweets equally amongst 7 children, how many sweets will each child get?
How many sweets will be left over? (3)

3. Calculate: 722 ÷ 4   (3)

4. Fill in > , < or = to make a correct sentence.

    500 ÷ 5 ☐   100 ÷ 10   (1)

5. Draw a line connecting the question in column A to the correct answer in
    column B.
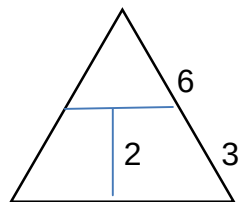
Column A	Column B
125 ÷ 5	50
333 ÷ 3	25
450 ÷ 9	111

(3)

Multiplication and division as inverse operations

1. 78 x 8 = 624 means 624 ÷ 8 = _____ and 624 ÷ 78 = _____   (2)

2   Look at the number triangle and write down 2 different number sentences.

(2)

Ratio and Rate

1. Kenny has R5,00, Mpho has R7,00 and Thato has R6,00.

    a. The ratio of Kenny's amount to Mpho's amount = _____.   (1)

    b. The ratio of Kenny's amount to Thato's amount = _____.   (1)
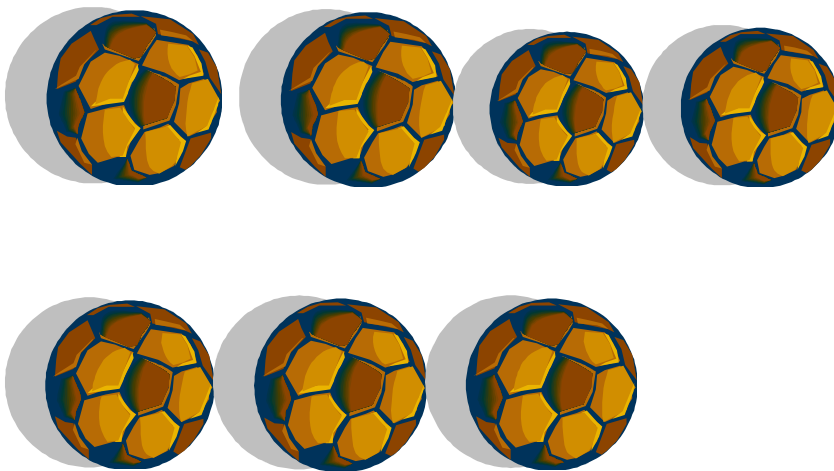
    c. The ratio of Mpho's amount to the total amount = _____. (1)

2. Write down the ratio of the number of rabbits to the number of cows.

(1)

10
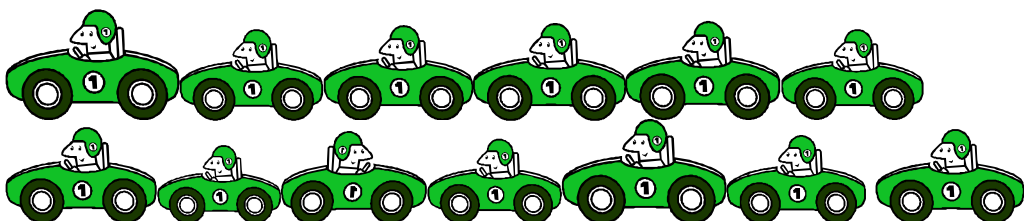
3. James is 5 years old and his aunt is ten times older than James.

    Aunt's age : James' age = _____ (1)

4. Complete to express as a rate:

    a. 60 seedlings planted in 6 rows means _____ seedlings per
        row. (1)

    b. 5 apples cost R4,00 means the cost is _____ cents per apple. (1)

5. One soccer ball costs R42,50. How much will the soccer balls in the
    picture cost?

(2)

Grouping and sharing with remainders

1. How many cars will be left after sharing the following toy cars equally
    amongst 3 brothers?

(1)

2. Calculate 41 ÷ 4. (2)

11

3. Troy has 127 shells in his collection. He has 10 little boxes. He wants to pack same number of shells in each box.

   a. How many shells will he put into each box? (1)

   b. How many shells will be left over? (1)

4. Complete 56 ÷ 6 = _____ remainder _____. (1)

Solve problems involving common fractions, including grouping and sharing

1. One tenth of the 30 bananas is rotten. How many bananas are rotten? (1)

2. Sabrina divided 14 cupcakes equally amongst 4 learners. How many cupcakes does each learner get? (2)

3. Aunty Peggy's 5 grandchildren came to visit her. She shares a bottle of cooldrink equally amongst the 5.

   a. What fraction of cooldrink does each child get? (1)

   b. Sue gives her cooldrink to Omar. What fraction of cooldrink did Omar get? (1)

4. $\frac{2}{3}$ of 24 pine trees were chopped down for Christmas. How many trees were chopped down? (2)

5.

One third of the tigers in the picture were injured. How many tigers were injured? (1)

6. Serena spent $\frac{1}{5}$ of her R60,00 pocket money on sweets and another $\frac{1}{5}$ of her money on a pen.

    a. Total amount spent   = _____   (2)

    b. Fraction of money left = _____   (1)

Problem-solving involving money

1. Calculate the change from R10,00 if I spend :
    a. R6,50   (1)
    b. R5,20   (1)

2. Calculate the cost of 3 identical toys if 1 toy costs R12,34.   (3)

3. Complete the table to calculate the total value.

Notes	R5,00	R1,00	20c	10c	Total
2 x R20,00	4	6	5	4	a.
6 x R10,00	3	1	5	2	b.

    (2)

4. Calculate R38,32 + R7,82 + R4,00 .   (2)

5. Jabu wants to buy a T-Shirt for R86,99 and a poster for R25,89.

    a. How much will this cost altogether?   (2)

    b. Jabu only has R100,00 in his wallet. How much more money does he need?   (1)

Geometric patterns

1. Draw the next five shapes in this pattern:
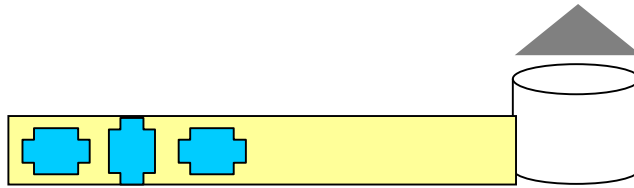
    (1)

2. How many matches are needed to make the 4th shape?
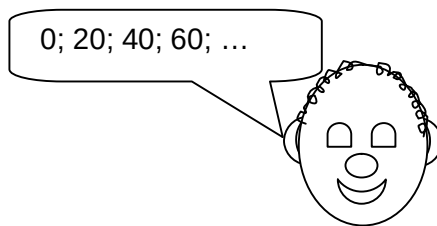
    (1)

3. a. Complete the design on the wall below. (1)

b. In which country can you find this design? (1)

Numeric patterns

1. Complete each number pattern.

a. 1; 2; 4; 7; 11; _____; _____; _____. (1)

b. 1; 6; 11; _____; _____; _____; 31 (1)

2. Sipho counts like this:

0; 20; 40; 60; …

a. Will the number **560** be part of this pattern? (1)

b. How do you know this? (1)

3.   1   = 1
         1 + 3   =   4
      1 + 3 + 5   =   9
   1 + 3 + 5 + 7 = 16

Write down the next two lines of this pattern. (2)

Relationships

1. One beetle has 6 legs.

Two beetles have 12 legs.

How many legs do 20 beetles have? (2)

14

2. Sammy has 23 marbles. Imraan has 12 more marbles than Sammy. Together they have 58 marbles. Write down the number sentence for the above statement. (2)

3. Identify the rule in each sequence.
    a. 44 ; 49 ; 54 ; 59; … (1)
    b. 67 ; 77 ; 87 ; 97; … (1)
    c. 2 ; 6 ; 18 ; 54; … (1)

4. A pattern is shown in the table. Explain it in words.

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63

(1)

Number sentences

1. Write this word problem as a number sentence.
   Yusuf has R84, 00 to buy fancy chocolates for his friends. One fancy chocolate costs R6, 00. How many chocolates can he buy? (2)

2. Create your own word problem using the number sentence 35 x 9 = 315. (2)

3. Which instruction was used in the table below.

Number I started with	Number after using the instruction
3	7

(1)

4. Fill in + or – to make the following sentences correct.

    a. 165 _____ 145 _____ 48 = 262
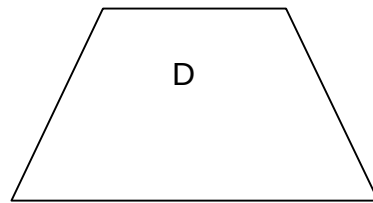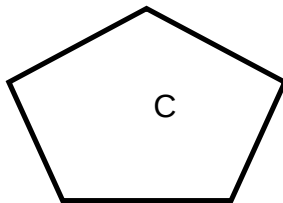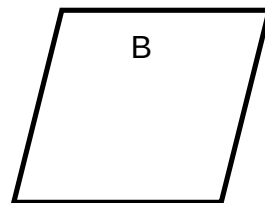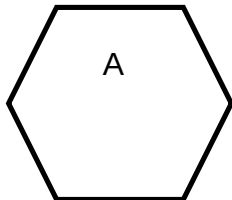
    b. 789 _____ 709 _____207 = 287   (4)

Recognise and name polygons

1.

| Trapezium	Paralellogram
Pentagon	Hexagon
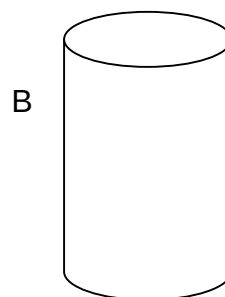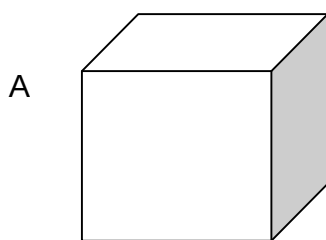
Use the names given in the table to name the following polygons.

                                                       (4)

3-D objects

1. Study the following 3-D objects and complete the table below.
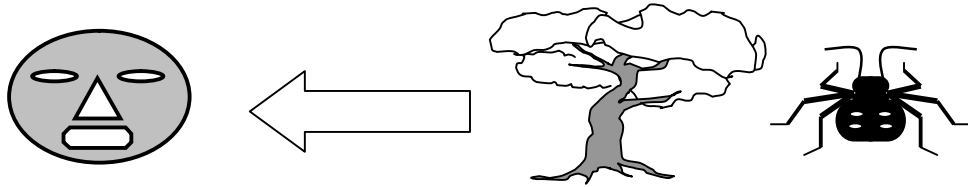
	Name of object	Number of faces	Number of vertices	Number of edges
A				
B				

                                                       (4)

16

Recognise, draw and describe line(s) of symmetry in 2-D shapes

1. Draw in the line(s) of symmetry for those pictures which you think are symmetrical.
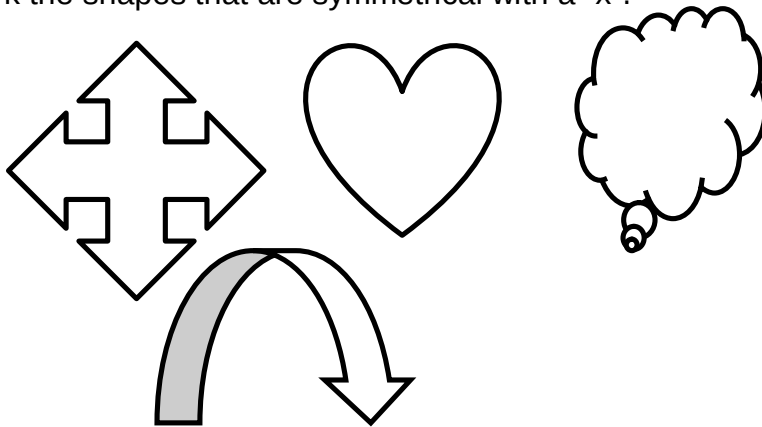

(3)

2. List any four capital letters in the alphabet that are symmetrical.   (2)
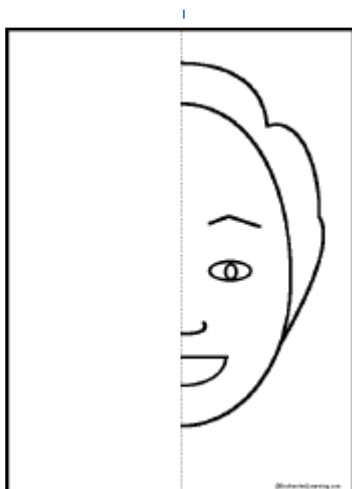
3. Mark the shapes that are symmetrical with a "x".

(2)

4. Draw the other part of the face to make a symmetrical picture.

(2)

Tessellation

1. Which of the following shapes can be used to tesselate a surface.
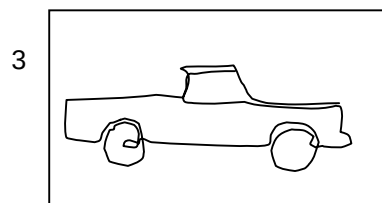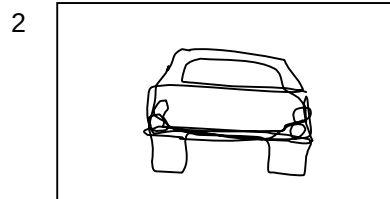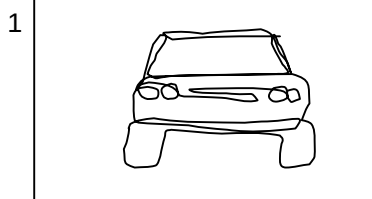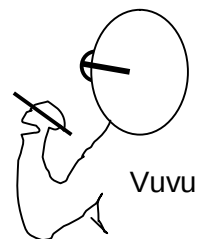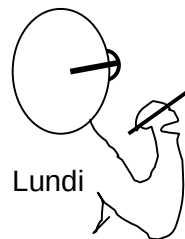
(1)

2. Create your own tesselation. (2)

3. Why do squares and triangles tesselate and circles cannot be used in a tesselation? (2)

Identify everyday objects from different views

1. Match the drawing to the child who drew it.

Andrew

Vuvu

Lundi

1

2

3
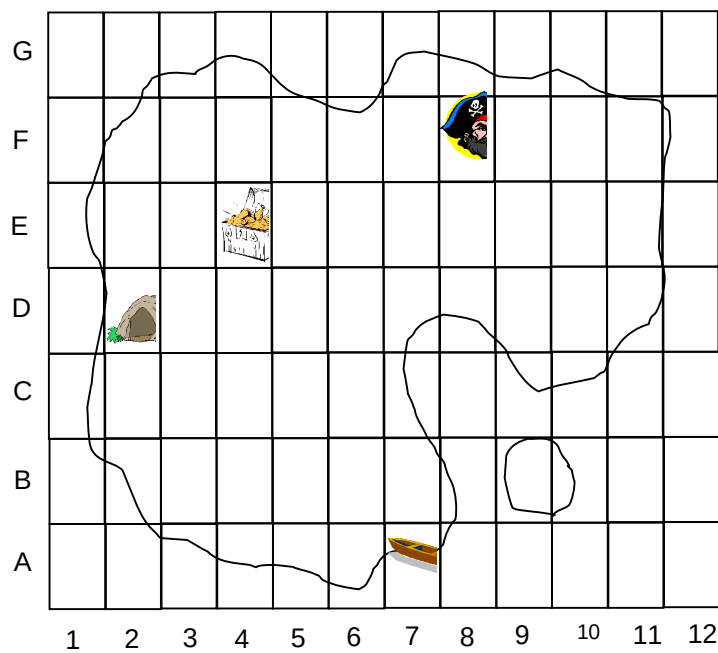
(3)

Locate positions of objects on a coded grid

1. Look at the map of the island and write down the location of each of the following, by combining a letter and number e.g. D 10.

    a. The pirate   (1)
    b. The lifeboat   (1)
    c. The cave   (1)
    d. The treasure   (1)

2.

	A	B	C	D
1				
2				
3				
4				

Use the above grid to answer the questions.

a. Plot the following points   A3 ;   B1   and C3
b. Join the points and name the shape you have created.   (3)

Time

1. Look at the Departures board at the airport and answer the question which follows.

Departures		
Destination	**Time**	**Flight Number**
Mossel Bay	07:45	S.A.A. 769
Knysna	10:20	B.A. 172
Johannesburg	20:00	S.A.A. 372

Draw an analogue clock face to show the time of departure of flight number S.A.A.769.

(2)

2. A man leaves Cape Town at 10.30 a.m. and arrives in George at 3.45 p.m.

How long did he take to complete his journey? (2)

3. Complete ...
    a. A century   = _____ years.
    b. 3 years   = _____ months.
    c. June has _____ days.
    d. A decade   = _____ months (2)
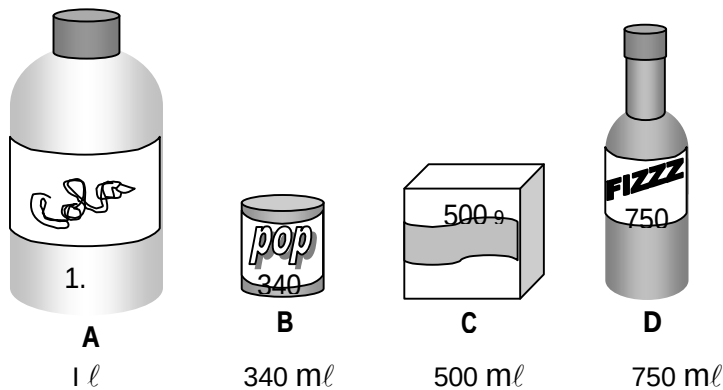
4. Complete the table.

Number of minutes	1	2	5	10
Number of seconds				

(2)

Measurement

1.

A	B	C	D
l ℓ	340 mℓ	500 mℓ	750 mℓ
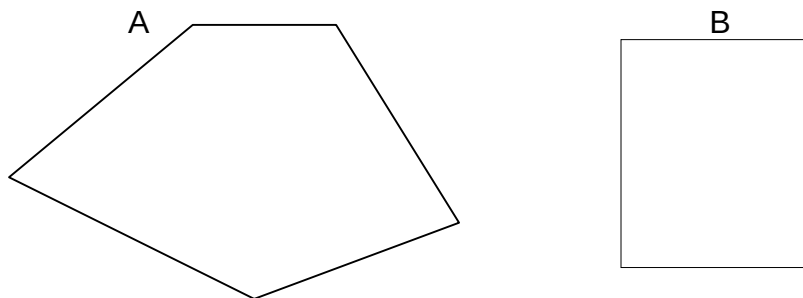
   a. Use the letters A , B, C and D to arrange the containers from the one that holds the least to the one that holds the most.   (1)

   b. How much more cool drink does the Cola container hold than the Pop can?   (1)

   c. How much cool drink do the four containers hold altogether?   (2)

2. Which unit of measurement is used to calculate the amount of water in a swimming pool?   (1)

3. Complete the following:

   a. 0,5 litres = _____ml

   b. 2 cm   = _____mm

   c. 500 mm = _____m

   d. 1 500g   = _____kg   (2)

4. Shireen used 2 litres of water for making tea and coffee, 50 litres of water for doing washing and 32 litres of water in her garden. How much water did she use?   (2)

5. Draw arrows to match column A to column B.

A	B
Unit to measure distance	kilogram
Unit to measure mass	litres
Unit to measure liquids	metres
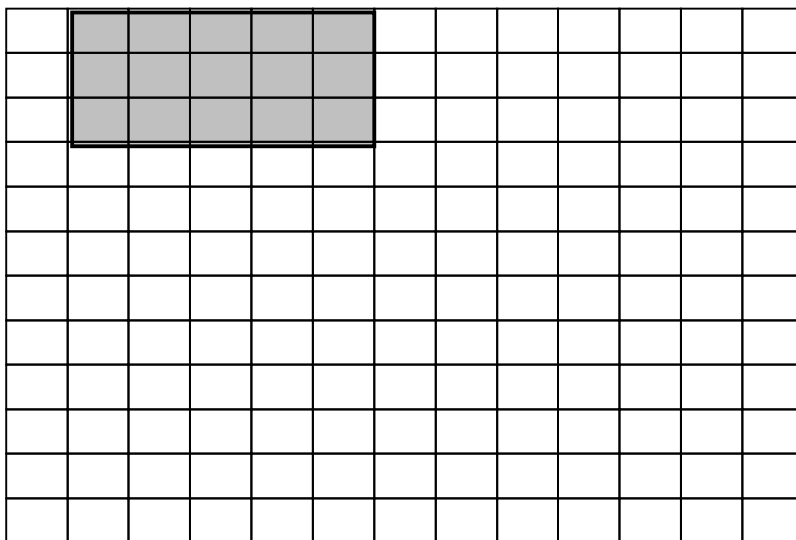
(3)

6. Measure and calculate the perimeter of each shape in mm.

A

B
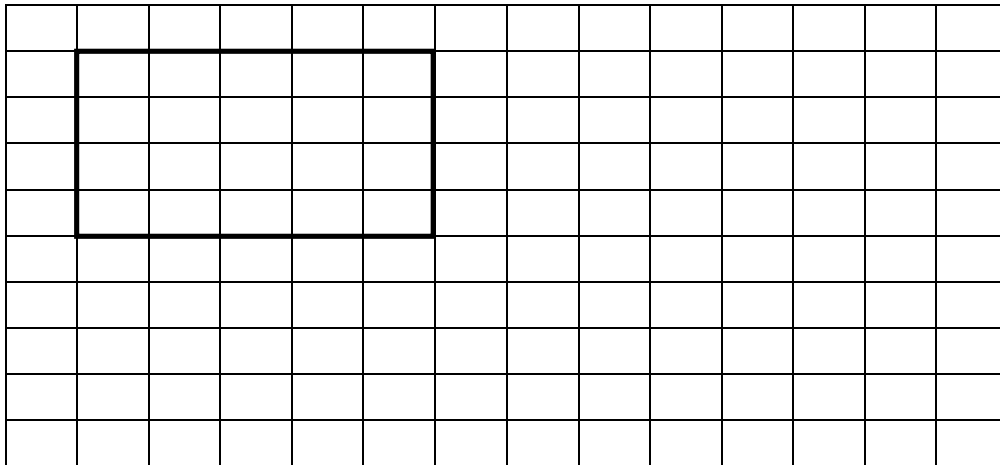
(4)

7. On the grid, draw two more different shapes that cover exactly the same number of squares as the given rectangle.
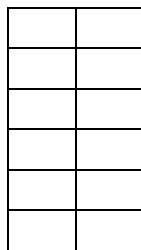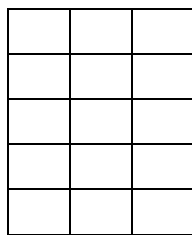
(2)

8. How many squares does this shape cover?

(1)
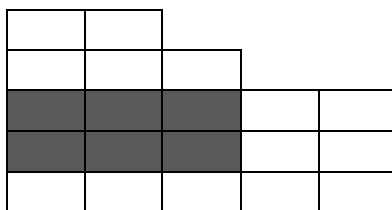
9. Rectangle A   Rectangle B

a. Which rectangle is the biggest?

b. How many small squares make up rectangle A?

c. How many small squares make up rectangle B?

(3)
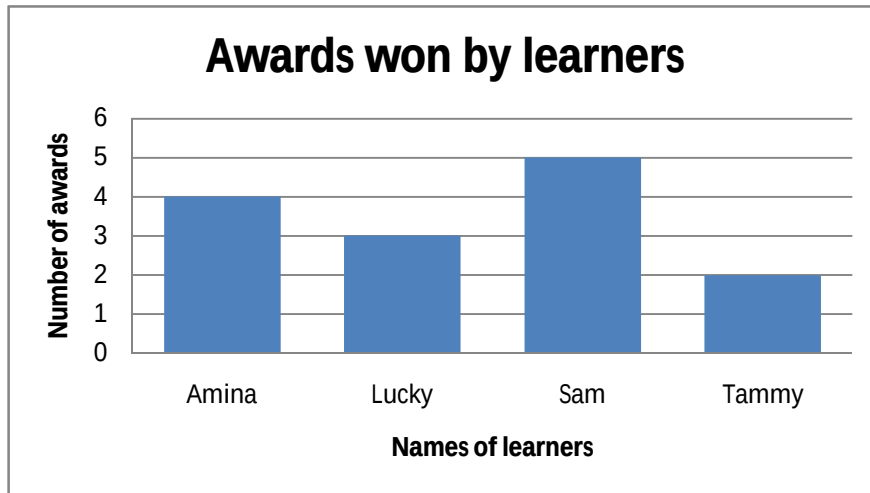
10. What is the area of the shaded part?

(1)

Data handling

1. The graph shows the number of awards learners won in a Mathematics test.

Awards won by learners
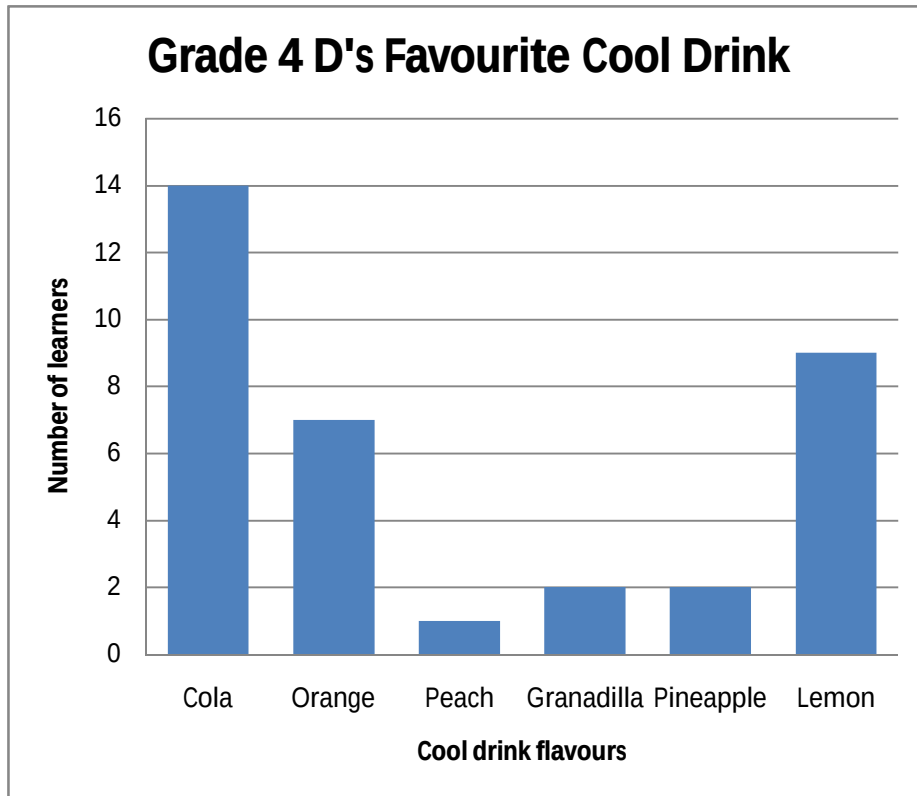
(4)

Complete the frequency table.

| Name	Tally marks	Frequency
Amina		
Lucky		
Sam		
Tammy		
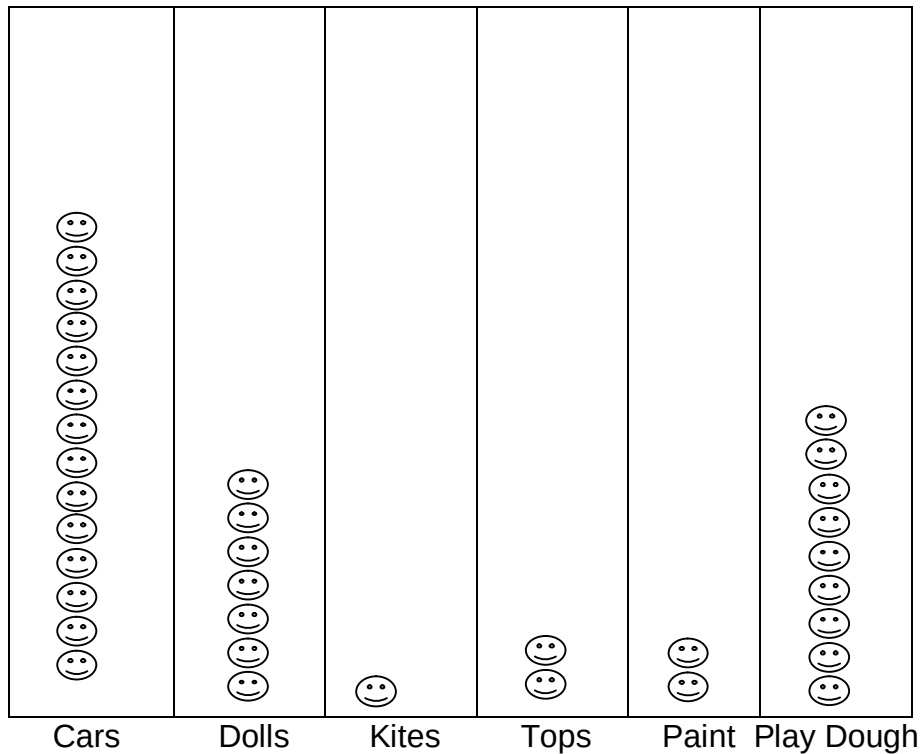
a. Who received the most awards? (1)

b. How many awards were won altogether? (2)

2. The bar graph shows the favourite cool drink flavours of Grade 4D learners.

Grade 4 D's Favourite Cool Drink

a. What is the difference between the number who prefer the cola to the lemon flavour? (1)

b. How many Grade 4D learners were questioned altogether? (2)

3. The pictograph shows the popular toys amongst learners.

KEY- 1 face represents 5 learners.

a. Which toy is the most popular?

b. Which toy is the least popular?

c. How many learners chose play dough?

d. How many more learners prefer dolls to tops?   (4)

Probability

1. State whether the following events are likely to happen or unlikely to happen.

a. Tasneem will have two birthdays in 2012

b. The day after Wednesday will be Thursday.

c. I will inhale air today.   (3)