



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

ANNUAL NATIONAL ASSESSMENT

GRADE 6

MATHEMATICS

TERM 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 FORWARDS AND BACKWARDS IN DECIMALS TO AT LEAST 2 DECIMAL PLACES.

Circle the letter of the correct answer in QUESTION 1-3.

1. Write the fourth number in this number sequence.

0,4 ; 0,6 ; 0,8 ; _____ .

A 10

B 0,1

C 1

D 1,2

(1)

2. Which is the missing number?

0,17 ; 0,15 ; 0,13 ; 0,11 ; _____ .

A 0,9

B 0,009

C 0,09

D 0,10

(1)

3. Which number is left out in this pattern?

9,12 ; 9,08 ; 9,04 ; _____ ; 8,96

A 9,02

B 9

C 8,92

D 8,94

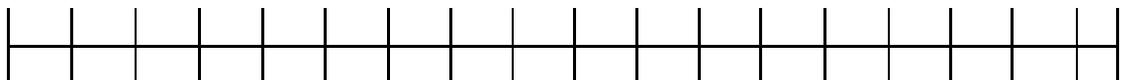
(1)

4. Complete the following number patterns and describe the rule you used.

(2)

0,25 ; 0,3 ; 0,35 ; 0,4 ; _____

5. Which number is represented by the **D** on the following number line?



0,44 0,42 0,4 **D** 0,32 0,28

(1)

6. Fill in the missing numbers.

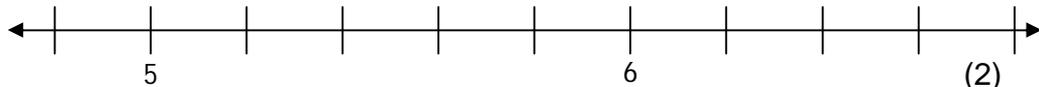
1 ; ___ ; ___ ; ___ ; 2 ; 2,25 ; 2,5. (2)

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



(2)

8. Place 5,6 and 6,4 in their correct positions on the number line.



(2)

9. Count backwards in 30s from 7 050 to one number larger than 6 970. (2)

10. Complete the number chain.



RECOGNISE, REPRESENT, DESCRIBE AND COMPARE WHOLE NUMBERS TO AT LEAST 9-DIGITS.

Circle the letter of the correct answer in QUESTION 1-2.

1. Which number is represented by $(3 \times 10\,000) + (40 \times 100) + (900) + (15 \text{ tens}) + (7 \times 1)$?

- A 349 570
- B 34 957
- C 35 057
- D 34 579

(1)

2. The number, three hundred and fifty nine thousand eight hundred and three, can be written as

- A 359 308
- B 395 803
- C 359 803

D 593 803 (1)

3. Underline the number two million, three hundred and eighty-five thousand seven hundred and forty-nine.

249 785 2 385 749
2 849 857 2 385 479
2 859 784

(1)

4. Choose any two of the given numbers that are bigger than 1 million.

(2)

967 204; 198 764,23 998 537 19 234 556 3
999,672

5. Which number is represented by * ?

$50\,000\,000 + * + 190\,000 + 500 + 80 + 7 = 56\,190\,587$ (1)

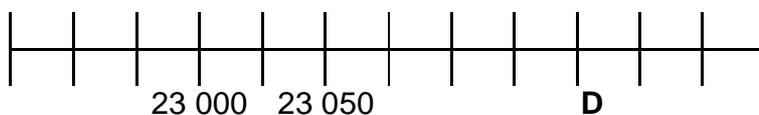
6. Complete:

$3\,567\,439 = (3 \times \text{_____}) + (5 \times \text{_____}) + (6 \times \text{_____}) + 7\,000 + 400 + 39$ (3)

7. Write 42 631 627 in expanded notation.

(3)

8. Which number is represented by the **D** on the following number line?



(1)

9. Arrange the given numbers in descending order of size.

212 143 123 243 413 123 342 123 (2)

10. The following number of spectator tickets were sold at the Olympics:

1 770 239 for swimming, 68 945 for weightlifting, 1 707 239 for gymnastics and 2 165 001 for athletics. Which sport was the most (1)

popular?

11. Which number is exactly halfway between 23 450 and 23 500? (1)
12. In the grid below shade the number that is 2 million more than 457 342 109.

657 342 109	457 542 109
459 342 109	477 342 309

 (1)

13. Write the following number in words:
234 709 (1)

RECOGNISE THE PLACE VALUE OF WHOLE NUMBERS TO AT LEAST 9-DIGIT NUMBERS.

Circle the letter of the correct answer in QUESTION 1-4.

1. What is the value of the underlined digit in 64 379 568?
- A 4 x 10 000 000
B 4 x 100 000
C 4 x 1 000 000
D 40 000 000 (1)
2. What is the place value of the underlined digit in 76 490 213?
- A Hth
B TTh
C TM
D M (1)
3. Which number has a 7 in the thousandth's place?
- A 3,17
B 8,78
C 23,007
D 0,070 (1)
4. What is the place value of the underlined digit in 357 219 432?
- A 10 000 000

- B 1 000 000
C 100 000 000
D 100 000 (1)
5. What is the value of the digit 2 in the number 127 856 403? (1)
6. What is the place value of the underlined digit in 205 504 379? (1)
7. Write a number with nine digits that contains the digit 4 once only, so that the place value of the 4 is four hundred thousand. (1)
8. These are the actual populations of two countries:
Country A: 21 368 071
Country B: 157 826 403
- a. How many people are indicated by the digit 5 in the number for the Country B?
- b. How many people are indicated by the digit 3 in the number for the Country A? (2)
9. Add the four amounts, represented by the underlined digits.
R63,04 ; R46,30 ; R4,36 and R43,06 (1)

RECOGNISE MULTIPLES AND FACTORS OF WHOLE NUMBERS.

Circle the letter of the correct answer in QUESTION 1-3.

1. Which number is not a factor of 36?
- A 3
B 4
C 8
D 18 (1)
2. Which number between 12 and 144 is a multiple of 12?
- A 12
B 96
C 106

- D 46 (1)
3. Insert the missing factor of 12 : 2 , __ , 12 , 3 , 6 , 4
- A 5
 B 1
 C 7
 D 8 (1)
4. I count in multiples of 16, up to 160.
- 4.1 Will I count the number 32? (1)
 4.2 Will I count the number 144? (1)
5. 5.1 Complete the pattern 256; 512; 1 024; _____ ;
 5.2 _____; _____ (2)
 State the rule you used to complete the pattern.
6. Write down the multiple of 7 between 44 to 54. (1)
 7. List all the factors of 225. (1)
 8. 1 , 2 , 4 , 16 and 32 are 5 of the 6 factors of 32. Write down the (1)
 9. missing factor. (2)
 Which 2 whole numbers can I multiply to get to 125?
10. List the first three multiples of 21. (2)
 11. Find the lowest common multiple of 12 and 36. (1)
 12. Write down the factors of 57 which lie between 1 and 57. (2)

RECOGNISE PRIME NUMBERS TO AT LEAST 100.

Circle the letter of the correct answer in QUESTION 1.

1. Which number is a prime number?
- A 21
 B 9

**RECOGNISE AND USE EQUIVALENT FORMS OF NUMBERS INCLUDING:
COMMON FRACTIONS; DECIMAL FRACTIONS AND PERCENTAGES.**

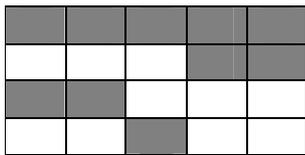
Circle the letter of the correct answer in QUESTION 1-2.

1. Which percentage has the same value as 0,75?

- A 7,5%
- B 0,75%
- C 75%
- D 5,7%

(1)

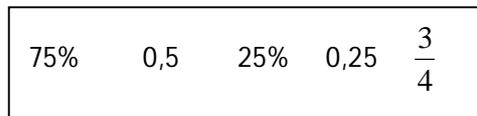
2. Which percentage is indicated by the shaded part of the diagram below:



- A 10%
- B 50%
- C 5%
- D 0,5%

(1)

3. Write down all the equal pairs of numbers in the frame from the diagram below:

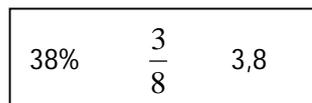


(2)

4. Write 45% as a fraction in the simplest form.

(1)

5. Rewrite the following numbers as decimals in descending order:



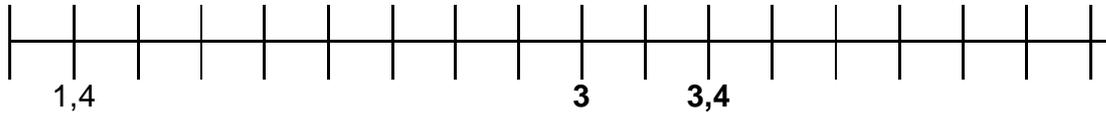
(3)

6. Write the following numbers in the correct places on the given

number line.

6.1 $\frac{13}{5}$

6.2 4,4



(2
)

7. Draw straight lines to match the fractions with the correct percentages and/or decimal fractions.

$\frac{3}{8}$		0,5
$\frac{7}{14}$		37,5%

(2
)

8. Complete the following: $\frac{1}{3} = \frac{\quad}{6} = \frac{3}{\quad}$ (1)

9. Simplify $\frac{24}{36}$ (1)

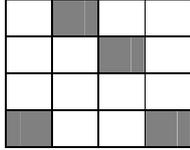
10. Replace Δ with the correct relationship sign.

10.1 $\frac{1}{4} \Delta \frac{1}{10}$ (1)

10.2 $12,5 \Delta \frac{1}{8}$ (1)

10.3 $100\% \Delta 1$ (1)

11.



Write the shaded area in the above diagram as:

- 11.1 a percentage (1)
11.2 a decimal fraction (1)
11.3 a common fraction (1)
12. You obtained 27 out of 50 for a Maths test. What percentage did you get? (1)
13. Peter obtained 68% for a maths test. The question paper counted 50 marks. (2)
How many marks did he get of the 50?

14. Fill in the missing number:

$$\frac{3}{4} = \frac{12}{(\quad)} \quad (1)$$

15. Pule ate $\frac{3}{5}$ of his chocolate. Sam has an identical chocolate and ate $\frac{7}{10}$ of his. Who ate the most chocolate? (2)

ROUND OFF TO THE NEAREST 5, 10, 100 OR 1000.

Circle the letter of the correct answer in QUESTION 1-3.

1. Round 36 233 off to the nearest 5.
A 36 230
B 36 235
C 36 240
D 36 200 (1)
2. Which of the following numbers is the closest to 10 300?

- A 10 400
 B 10 030
 C 11 000
 D 10 350 (1)
3. Which is the best estimation of the number of South African soccer fans?
 A 1 500
 B 40 000
 C 150 000
 D 1 208 367 (1)
4. Round 24 059 off to the nearest 100. (1)
5. Thabo rounded the number of marbles to the nearest 5. His answer was 340. Write down all the possible numbers for the actual number of marbles. (1)
6. I bought an article for R46,38. The cashier did not have any one or two cent coins. If rounded down to the nearest 5c, how much will I be charged for the article? (1)

ADD AND SUBTRACT WHOLE NUMBERS

1. The following spectator tickets were sold at the Olympics.
 1 625 407 for gymnastics, 68 945 for weightlifting, 2 165 001 for athletics and 770 239 for swimming.
- 1.1 How many tickets were sold altogether? (3)
- 1.2 How many more tickets were sold for athletics than for swimming? (2)
2. Calculate using columns.
- 2.1 $3\,423\,567 + 766\,678 + 2\,378\,487$ (3)
- 2.2 $3\,032\,512 - 1\,753\,769$ (2)

3. There are 41 295 spectators at a soccer match. If 23 985 were men and 11 378 were women, how many children attended the match? (3)

4. Complete the following by using compensation.

$$6\,467 - 2684$$

	6	4	6	7	
-	2	6	8	4	
	3	4	6	7	$6\,467 - 3\,000 = 3\,467$
+					
	3	7	8	3	

5. Calculate the difference between 236 498 and 1 302 301. (3)
6. Calculate the missing number in $354\,378 + \underline{\hspace{2cm}} = 1\,503\,674$. (2)
7. A farmer had 2957 sheep. During the winter 134 died and in spring 813 lambs were born. How many sheep were there then on the farm? (3)

ADD AND SUBTRACT COMMON FRACTIONS

1. Calculate and give the answers in the simplest form.

1.1 $\frac{5}{12} + \frac{1}{6}$ (2)

1.2 $\frac{5}{8} - \frac{1}{2}$ (2)

2. Determine the missing number.

- 2.1 $() - \frac{1}{4} = \frac{11}{8}$ (2)
- 2.2 $2\frac{1}{3} + () = 3\frac{1}{6}$ (2)
3. Peter ate $\frac{3}{8}$ and Kangalani ate $\frac{1}{4}$ of a pizza. Which fraction of the pizza is left for Amy? (3)
4. There are 960 learners at a school. $\frac{3}{8}$ of the learners are absent. How many learners are absent? (2)
5. Calculate $\frac{5}{12}$ of 480. (2)
6. Claire must decide if she wants a half of 80 smarties or a quarter of 120 smarties. Which choice will provide her with the most smarties? (2)
7. My fish pond is $\frac{2}{3}$ full of water. During a rainstorm it fills by another $\frac{1}{6}$.
- 7.1 How full is the pond after the storm? (2)
- 7.2 Will the dam overflow if it is filled by a further $\frac{1}{3}$? Explain your answer. (2)

MULTIPLY A 4-DIGIT NUMBER BY A 3-DIGIT NUMBER (IN COLUMNS)

1. A farmer can pack 2 139 oranges into a crate. How many oranges can be packed into 428 crates? (4)
2. Calculate the product of 7 876 and 393. (4)
3. A normal, healthy adult heart beats about 78 beats per minute.

- a. How many times will a heart beat in half an hour? (2)
- b. How many times will a heart beat in one hour? (2)
4. Determine the missing number in _____ \div 879 = 536. (4)
5. There are 253 boys on a camp. If another 189 boys join the camp, there will be an equal number of boys and girls. How many learners are on the camp? (3)

DIVIDE A 4-DIGIT NUMBER BY A 3-DIGIT NUMBER (USING LONG DIVISION)

1. Calculate the remainder if 284 650 is divided by 476. (4)
2. A farmer plants 235 rows of tomato plants. There are 17 plants in each row. He eventually picks an average of 11 tomatoes per plant. The tomatoes are put into packets of 13. In the packing process 34 tomatoes are damaged. How many packets of tomatoes can the farmer sell to the wholesaler? Try to do the sum using different methods. (6)
3. Complete the number sentence $125 \times$ _____ = 123 250. (3)
4. During a school excursion 785 learners were transported in busses. How many busses did they use to transport all the learners if each bus transported 65 learners? (3)
5. Calculate the value of y if $y \div 356 = 369$ remainder 24. (4)
6. Calculate: $10\ 000 \div 20 - 25 \times 20$ (2)

**ADD AND SUBTRACT POSITIVE DECIMAL FRACTIONS
MULTIPLY DECIMAL FRACTIONS BY 10 AND 100.**

1. Circle the letter of the correct answer in QUESTION 1.

$$25,27 \times 100$$

- A 2 527
B 0,2527
C 2, 527
D 257,2 (1)
2. Calculate $3,23 + 5, 62$. (1)
3. Calculate $6 - 2,34$. (1)
4. Calculate $2,4 + 4,2 - \underline{\hspace{2cm}} = 0,28$ (3)
5. True or false? $0,34 \times 100 = 3,4 \times 10$ (1)

RECOGNISE AND USE DIVISIBILITY RULES FOR 2, 3, 4, 5, 10, 100, AND 1000.

1. Circle the letter(s) of the incorrect statement(s).
A $45 + 39 = 39 + 45$
B $45 - 39 = 39 - 45$
C $9 \times 7 = 7 \times 9$
D $20 \div 5 = 5 \div 20$ (4)
2. True or false?
2.1 All even numbers are divisible by 2.
2.2 Numbers ending in 00 are divisible by 25.
2.3 5 is a factor of 105. (3)

MULTIPLE OPERATIONS WITH WHOLE NUMBERS

Circle the letter of the correct answer in QUESTION 1 - 3.

1. Calculate: $(58 + 12) - (33 - 19)$

- A 56
 B 18
 C 84
 D 9 (1)
2. What is the value of **B** if $21 - 6 = \mathbf{B} - 21$?
 A 15
 B 27
 C 36
 D 21 (1)
3. Which sum does not give an answer of 37?
 A $6 \times 5 + 7$
 B $(6 \times 5) + 7$
 C $6 \times (5 + 7)$
 D $(6 \times 5 + 7)$ (1)
4. Calculate:
 4.1 $2 + 3 \times 4$ (1)
 4.2 $2 \times 4 + 3 \times 2$ (1)
 4.3 $4 + 8 \div 2 - 4$ (1)
 4.4 $6 - 10 + 6$ (1)
5. Insert a operational sign to make the following number sentence true. (1)
 $32 - 4 \times 7 = 4$
6. Joe uses his calculator to perform a certain calculation. He then makes a mistake by multiplying the number by 10 instead of dividing by 10. The calculator answer is 9000.
 What should the original correct answer have been? (1)

PROBLEM SOLVING

1. Mr Peterson buys a chocolate for R3,45 and sells it for R5,50.

- 1.1 How much money did he make by selling the chocolate? (1)
- 1.2 How much profit can he make if he sells 67 chocolates? (2)
- 1.3 What will his loss be if he has to sell 15 chocolates for R2,95 each? (2)
2. A shop holds a sale giving a 10% discount on all the goods. What should I pay for a pair of jeans marked R250? (3)
3. There are 1 295 spectators at a soccer match. There are four times as many adults as there are children. How many of the spectators are children and how many are adults? (3)
4. A car travels at a constant speed of 120 km per hour. How far will it travel in 12,5 hours? (2)
5. Jacob has a part-time job as a packer in a supermarket. He earns R 9,50 per hour of work. If one working day is 8 hours, how much will he earn in 7 days? (3)
6. The rand – dollar exchange rate is quoted at 'R 7,67 to the dollar'. For how much can you exchange the \$35 which your aunt in New York sent you? (3)

GEOMETRIC AND NUMERIC PATTERNS

Circle the letter of the correct answer in QUESTION 1 - 3.

1. What will the next bead in this necklace look like?



(1)

2. Draw the next 5 beads in the string if the beading pattern continues.



(2)

3. Answer the questions about the following diagram pattern.

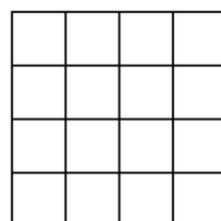
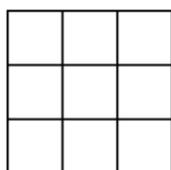
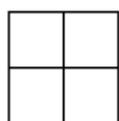


Diagram 1

Diagram 2

Diagram 3

Diagram 4

Diagram 5

3.1 Draw the next diagram.

(1)

3.2 Complete the table.

(2)

Diagram number	1	2	3	4				10	23	<i>n</i>
No. of small squares	1	4	9				64			

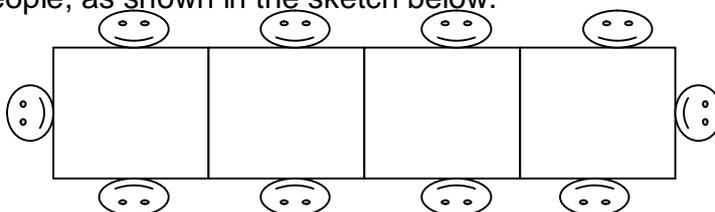
- 3.3 In your own words, describe the rule you used to draw diagram 5. (1)
- 3.4 In your own words, describe how you have found the number of small squares in diagram n . (1)

4. 1 ; 2 ; 4 ; 7 ; 11 ; 16 ; 22 ;

Look at the above number sequence and answer the questions.

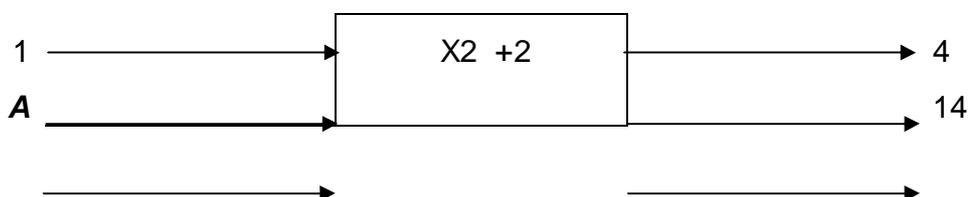
- a. Write the next number in the sequence. (1)
- b. Write down how to find term 9 in the sequence. (1)

5. At a party Pedro arranges small square tables, next to each other in a straight row, so that one person sits at each of the available sides of the table. For example with 4 tables, he can seat 10 people, as shown in the sketch below.



- 5.1 If Pedro arranges 5 tables as shown above, how many people can be seated? (1)
- 5.2 How many tables must he place next to each other if he wants to seat 20 people? (2)
- 5.3 Explain your answer. (1)
- 5.4 How many tables must he place next to each other if he wants to seat 30 people? (2)

6. Determine the value of **A** and **B** in the following flow diagram.





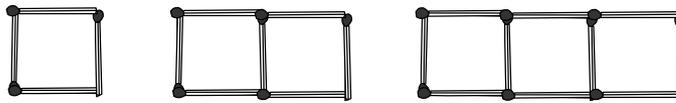
B (2)

7. Complete the following number sequence.

7.1 3; 7; 12; 18; _____; _____; _____; _____.

7.2 1; 1; 2; 3; 5; _____; _____; _____; _____.

8.



The above 'growing' diagrams are made of matches. Draw the next diagram. (1)

9 Complete the table for the diagrams in question 8.

Number of squares	1	2	3	4	5	10	20
Number of matches needed	4	7	10				

(3)

10. Solve the following number sentence:

$$4 \times \Delta - 3 = 45 \quad (1)$$

11. Fill the correct number in the number sentence $36 \div \underline{\quad} - 3 = 9$. (1)

12. Write a number sentence for the following word problem.

A farm worker gets paid R150 a day for 5 days every week. How much will she earn in 6 weeks? (1)

13. Write a word problem for the following number sentence:

$$27 \times 23 + 15 = 636 \quad (2)$$

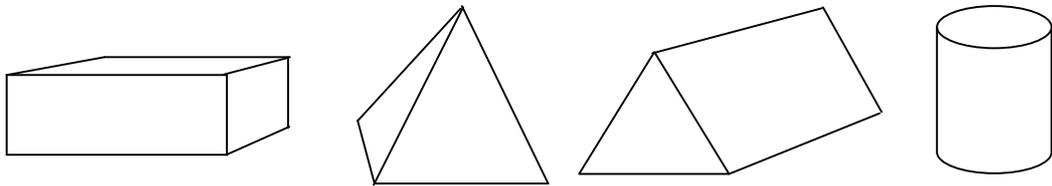
2-D SHAPES AND 3-D OBJECTS

1. Look at the following traffic signs and name each according to the shape of the figure.

(4)

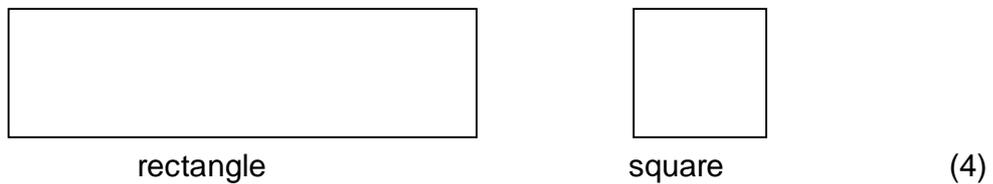
- 2 Draw lines to match the following 3D objects to their names.



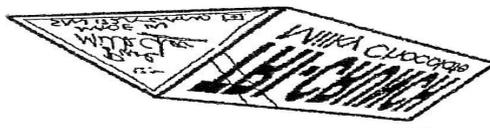
Triangular prism Cylinder Rectangular prism Pyramid

(4)

3. List all the similarities between a square and a rectangle.



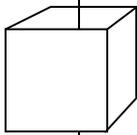
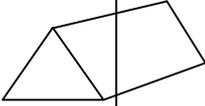
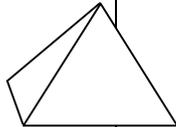
4. This is a drawing of a box of chocolates.



4.1 What kind of 3-D object is it? (1)

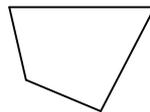
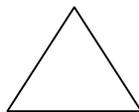
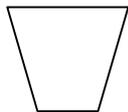
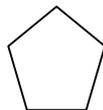
4.2 How many triangular faces does the box have? (1)

5. Complete the following table:

	Cube 	Triangular Prism 	Square-based Pyramid 
Number of faces			
Shape(s) of the faces			
Number of vertices			
Number of edges			
Number of curved surfaces			

(4)

6. Which 2 shapes will you group and state why you will group them?

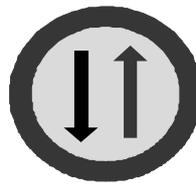


(1)

(1)

RECOGNISE, DRAW AND DESCRIBE LINE(S) OF SYMMETRY IN 2-D SHAPES.

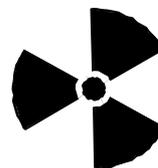
1. How many lines of symmetry can be drawn in these pictures?



(1)

(1)

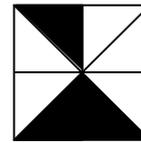
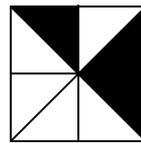
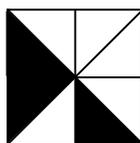
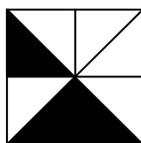
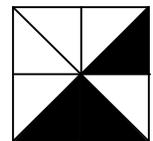
2. Draw the line(s) of symmetry on the 2 shapes below.



(1)

(1)

3. Which of the squares can be rotated to fit exactly onto the adjacent square?



A

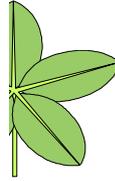
B

C

D

(2)

4. Only half of the picture has been drawn. Draw the rest of the picture.

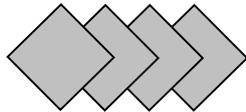


(1)

USE THE PROPERTIES OF ROTATIONS, REFLECTIONS AND TRANSLATIONS TO DESCRIBE TRANSFORMATIONS OF 2-D SHAPES AND 3-D OBJECTS. TRANSFORMATIONS

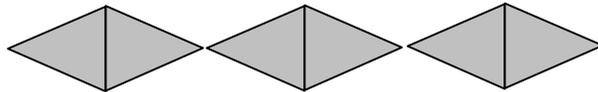
1. What kind of transformation(s) is illustrated in each of the following?

1.1



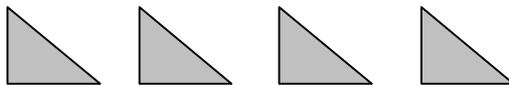
(1)

1.2



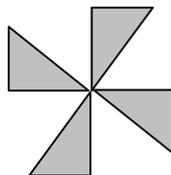
(1)

1.3



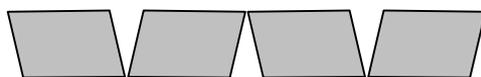
(1)

1.4



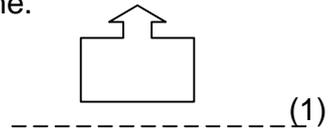
(1)

2. Draw the next shape to extend the pattern.



(1)

3. Reflect the given shape in the horizontal dotted line.



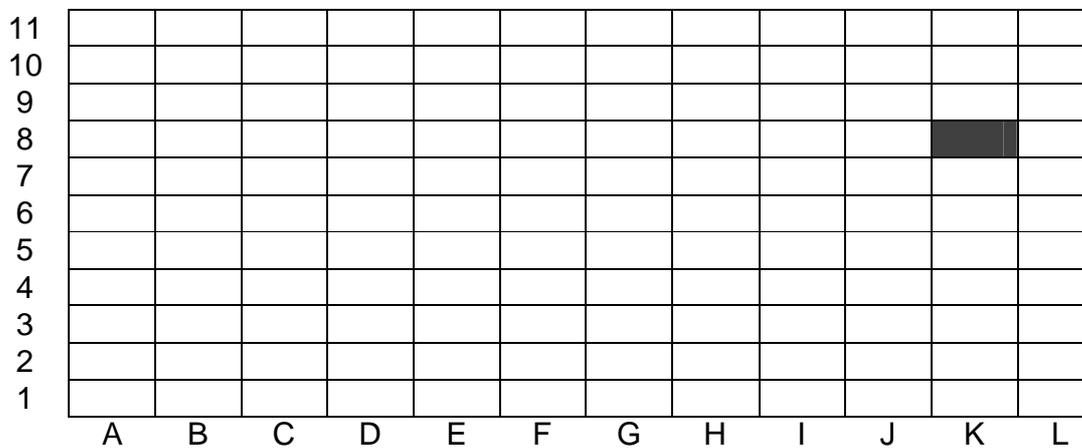
4. Will the following picture be completed if you reflect or translate it?



(1)

POSITION

1. The 'Pretty Tilings company' specialises in decorative tiling of floors. They also fix or replace damaged tiles on floors. The inspector gave the repairman a written description of the 2 tiles that need to be replaced.

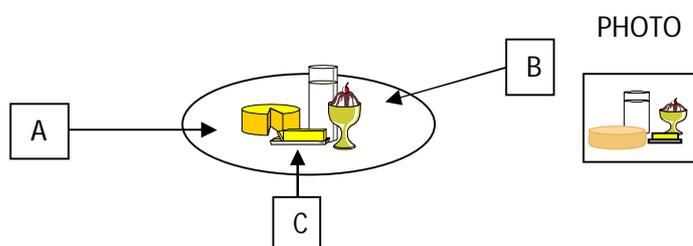


- 1.1 Shade the tiles in position B3 and 7H on the sketch of (1)

- 1.2 the floor. (1)

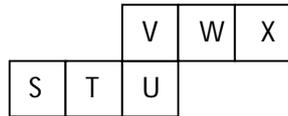
Which tile is marked on the sketch?

2. From which position was this photo taken?



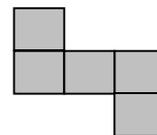
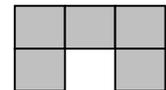
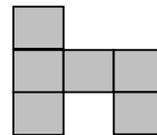
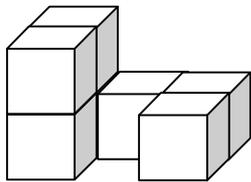
(1)

3. If the figure below is folded to form a cube, which letter will be opposite T?



(1)

4. Which diagram on the right shows the top view of Kim's block tower on the left?



(1)

TIME

1. Write down the time indicated on the face of the clock in words and in digital time.



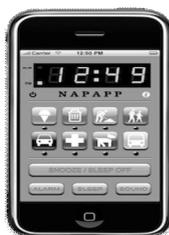
(1)

2. Draw the hands of the watch to show the time as 19:20.



(1)

3. Write down the time shown on the cellphone in words.



(1)

4. Complete the table.

Time in words	24- hour time	12- hour time
seven o'clock in the evening		7.00p.m.
quarter to ten in the morning	09:45	
	14:20	2.20p.m.
	22:15	10.15p.m.
midnight		12.00a.m.

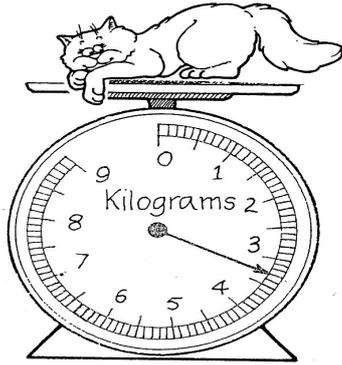
(4
)

5. The soccer practice started at 3 'o clock and ended at 15:30. How long did the players practise? (1)
6. A soccer match started at 16:00 and ended at 17:40. How long did the match last? (1)
7. What time did the TV program stop if it started at 6 'o clock and the duration was 1,5 hours? (1)

8. Convert the following as indicated.
- 5 minutes = _____ seconds
- 17 hours = _____ minutes
- 4 hours = _____ seconds
- 1 week = _____ minutes
- 2150 years = _____ decades (6)
9. A man leaves Cape Town at 10.30 p.m. and arrives in London at 6.45 a.m. the next day. How long did his flight take? (1)
10. If you watch TV for 45 minutes every day, how much time will you spend watching TV in 6 weeks? (3)

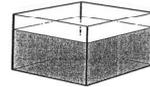
SOLVE PROBLEMS INVOLVING CALCULATING AND CONVERTING BETWEEN APPROPRIATE SI UNITS INCLUDING:

1. Complete.
- 1.1 3 tons = _____ kg
- 1.2 1 kg 25 g = _____ kg
- 1.3 2 l 18 ml = _____ ml
- 1.4 4 500 ml = _____ l
- 1.5 1 m 84 cm = _____ m (5)
2. Look at the scale and answer the questions below.



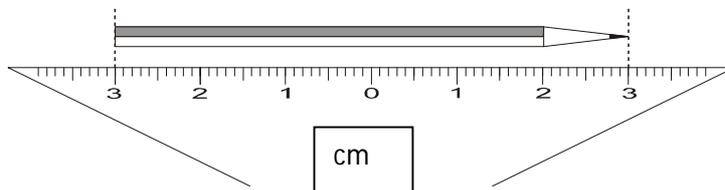
- 2.1 How many grams are shown by each small division of the scale?
- 2.2 scale?
- 2.3 What is the mass of the kitten in grams?
- 2.4 Write the kitten's mass in kilogram. (4)
By how much is the kitten's mass less than 9kg?

3. This tank holds 12 litres when full.
How much water is there in the tank when it is $\frac{3}{4}$ full?



4. Anthea packs a suitcase. There are 8 parcels in the suitcase, each with a mass of 600 g. The empty suitcase weighs 400 g. What is the total mass of the packed suitcase in kilograms? (3)

5. What is the length of this pencil in cm?



(1)

6. 250 ml of energy concentrate makes 1 litre of energy drink.

- 6.1 How much concentrate do I need to make 1,5 litres of energy drink? (2)
- 6.2 energy drink?

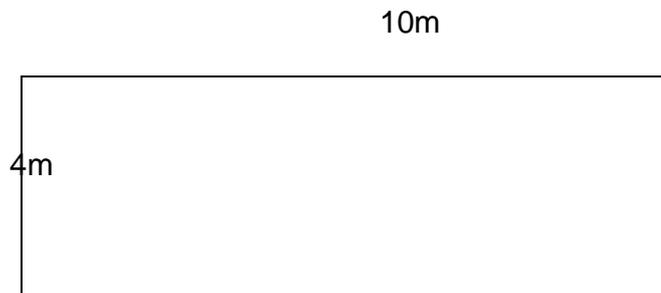
How much concentrate do I need to make 5 litres of energy drink?

7. If you invite 45 friends to your party, and each friend is allowed 2 cups of cooldrink, how many 2-litre bottles of cooldrink should you buy? (2)

8. Underline the correct answer. How much water will a kitchen kettle hold?

- 20 litres (1)
- 2 litres
- 500 ml

9. Use the dimensions of the rectangle to answer the questions.



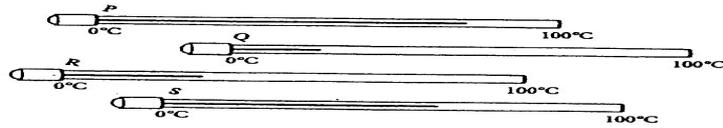
- 9.1 What is the ratio of the width to the length?
9.2 What is the ratio of the length to the width?
9.3 How many times is the rectangle longer than it is wide?
9.4 What fraction is the width of the length? (4)

10. Match the load to the most appropriate object by drawing lines.

800 kg		Handbag
35 ton		Elevator with 78 people
500g		Wheelbarrow

35 kg		Lorry	(4)
-------	--	-------	-----

11.



Which of the above thermometers shows a temperature of

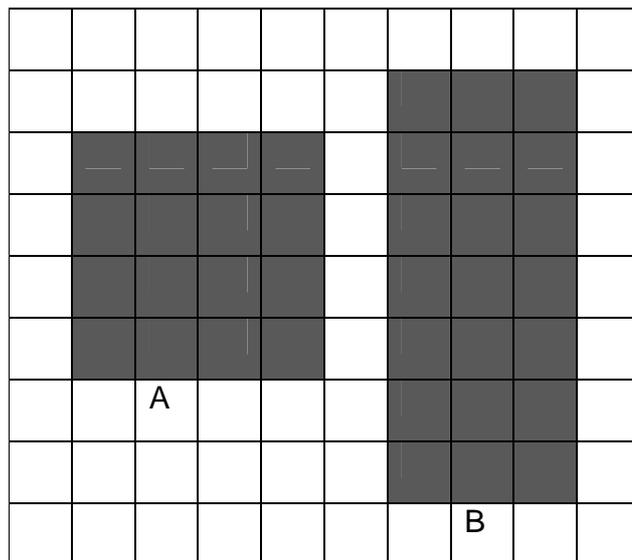
11.1 about 60°?

11.2 about 30°?

(2)

CALCULATE THE AREA OF RECTANGLES AND SQUARES USING SQUARE GRIDS.

1. The length of each block is 1 cm.



1.1 What is the length of the square?

1.2 What is the perimeter of the square?

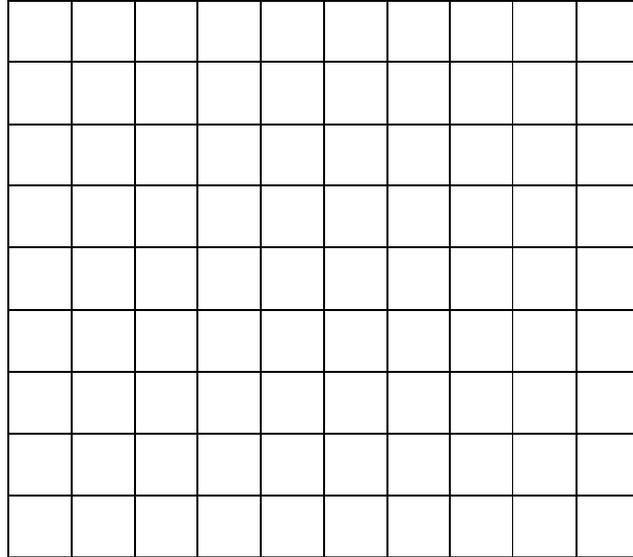
1.3 What is the breadth of the rectangle?

1.4 What is the perimeter of the rectangle?

1.5 What is the area of the square?

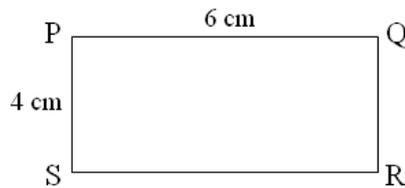
1.6 What is the area of the rectangle? (6)

2. Use the grid below and draw a rectangle where the area and the perimeter are both equal to 16 units.



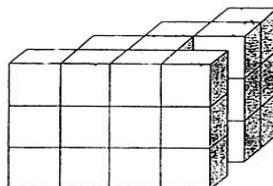
(2)

3. You want to enlarge the sides of the rectangle below so that the side PS is 6 cm long. How long will side PQ be after the enlargement?



(2)

4. This figure is built with cubic centimetre blocks.



- 4.1 How many cubes are used to build this figure?
- 4.2 What is the volume of the figure?
- 4.3 If this was a building, what will the area of the front face of the building be? (3)

DATA HANDLING

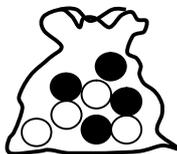
1. Siyanda has a white, a yellow and a red shirt. She also has black, green and navy jeans.
How many different combinations can she choose to wear? (1)

2. In each row of this table, an event is described.
Put a tick in the column which best describes the likelihood of each event.

Event	Impossible	Unlikely	50% chance	Likely	Certain
(a) You will turn 2 years old on your next birthday.					
(b) A coin is tossed to decide who has the kick-off in a soccer match. Bafana Bafana wins the toss at the start of their next match.					
(c) A slice of bread with butter and jam spread on one side is dropped on the floor. It lands with the jam side facing up.					
(d) A drawing pin is tossed and it lands with the pin facing downwards.					

(6)

3. A choir competition is being held at the Good Hope Centre in Cape Town. None of the choirs want to sing first. If there are two choirs in the competition, how can we decide who sings first? (2)
4. You have a R1 coin, a R2 coin and a R5 coin. Show all the possible outcomes of tossing these three coins. (3)
5. What is the probability of pulling a white marble out of this bag?



(1)

6. What is the ratio of the number of black marbles to the number of white marbles in the following figure?



(1)

7. Complete the table.

Car colour	Number of cars	Tally marks
red		### ///
white		### ### //
yellow	7	

(3)

8. Draw a bar graph to represent the data about the kind of vehicle which 40 customers drive. Complete the table and use the information to draw a bar graph.

Motor cycle	Car	Minibus	Bakkie	Heavy
-------------	-----	---------	--------	-------

				vehicle
8		8	7	5

Customers choice of vehicle

Number of customers					
	motor cycle	car	minibus	bakkie	heavy vehicle

(6)

9. In a survey, 50 people were asked about the number of people in each of their families. Here are the numbers they gave.

1 3 2 2 5 4 1 1 2 3 4 1 1 1 2 1 3
 2 4 1 1 3 1 2 2 3 3 5 3 2 2 1 4 6
 3 5 6 4 1 1 4 3 2 1 2 7 1 3 3 4

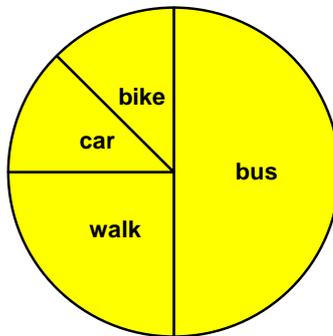
Organise the data in a frequency table.

10. Felicity wrote six maths tests. Her marks, out of 50, were 17, 23, 27, 29, 30 and 36. Find her mean mark.

11. Here are the first round scores in a golf tournament: 73, 79, 78, 80, 79, 74, 72, 76, 79, 77 and 72. What is the median score?

12. The price of a loaf of bread at ten shops was found to be:
R4,40 R4,90 R5,10 R6,80 R6,20
R4,40 R6,90 R5,10 R4,40 R4,70.
What is the mode of the prices?
13. 120 learners in Grade 6 were asked how they came to school,
and a pie graph was drawn to illustrate the results.

**HOW GRADE LEARNERS 6 CAME TO
SCHOOL**



- 13.1 What fraction of the learners walked to school?
- 13.2 How many learners came to school by bike?