



**basic education**

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

# **ANNUAL NATIONAL ASSESSMENT 2013**

## **GRADE 6**

### **MATHEMATICS EXEMPLAR QUESTIONS**

**This booklet consists of 20 pages, excluding the cover page**

## GUIDELINES FOR THE USE OF ANA EXEMPLARS QUESTIONS

### 1. How to use the exemplar questions

While the exemplar questions 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 questions, or a manageable group of questions, can be used at different stages of the teaching and learning process as follows:

- 1.1 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.
- 1.2 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.
- 1.3 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.
- 1.4 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 the exemplar questions.

### 2. Memoranda or marking guidelines

A typical example of the expected responses (marking guidelines) has been given for each exemplar 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.

### 3. Curriculum coverage

It is extremely critical that the curriculum must be covered in full in every class. The exemplar questions 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.

1. What is the missing number in the number sequence?

\_\_\_\_\_ ; 46 ; 37 ; 28 ; 19

A 9

B 54

C 55

D 83

(1)

2. What is the seventh number in the following sequence?

5; 10; 15; 20; ...

(1)

3. Complete:  $69 - 32 = \text{_____} - 7$ .

A 30

B 36

C 37

D 44

(1)

4. Select a number sentence to match the following statement:  
Seven less than a certain number  $m$  is equal to twelve.

A  $7 - m = 12$

B  $12 - m = 7$

C  $m + 7 = 12$

D  $m - 7 = 12$

(1)

5. Oliver and Jacob listed the marks for their Mathematics class tests.

Jacob's marks: 20; 16; 10; 3; 12; 10; 11; 14; 5; 19; 4

What is Jacob's median mark?

(1)

6. What is the value of **D**?  $21 - \mathbf{D} = 27 - 21$
- A 27
  - B 6
  - C 21
  - D 15
- (1)

7. What is the middlemost score in the data set below?
- 11; 12; 11; 14; 14; 13; 12; 11
- A 11
  - B 12
  - C 13
  - D 14
- (1)

8. The following are the shoe sizes of some Grade 6 learners.

7	8	7	6	5
5	7	4	6	7
8	4	7	5	6

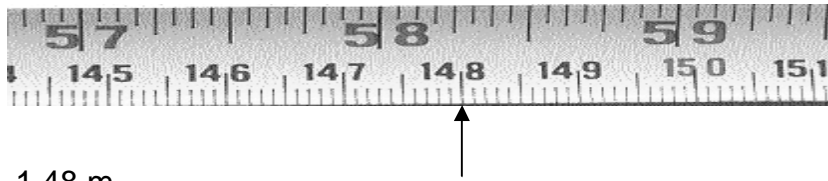
What is the *mode* of the shoe sizes?

What is the *median* of the shoe sizes? (2)

9. Which number has resulted from rounding off a certain number to the nearest 100 000?
- A 278 300
  - B 345 670
  - C 750 000
  - D 800 000
- (1)

10. 39 569 was rounded off to 40 000.  
To which number was it rounded off?
- A 5
  - B 10
  - C 100
  - D 1 000
- (1)
- 11 Round 35 963 off to the nearest 100.
- A 35 000
  - B 35 960
  - C 35 900
  - D 36 000
- (1)
12. What is the missing decimal number in the following number sequence?  
13,25 ; 13,3 ; \_\_\_\_\_ ; 13,4 ; 13,45
- A 13,30
  - B 13,35
  - C 13,5
  - D 13,40
- (1)
13. Write down the next decimal number.  
0,79 ; 0,76 ; 0,73 ; 0,7 ; \_\_\_\_\_
- (1)
14. Complete the following number pattern.  
1,24; 1,23; 1,22; 1,21; 1,20; \_\_\_\_\_
- (1)

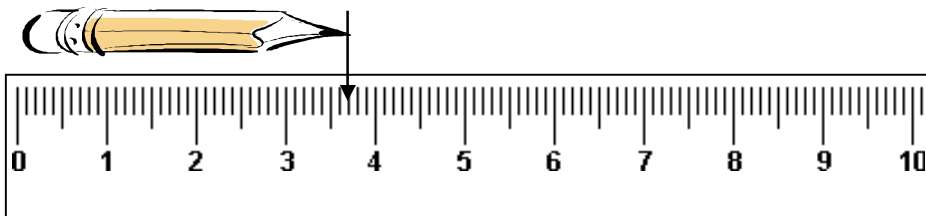
15. The tape measure indicates centimetres on the bottom scale. What is the length indicated by the arrow?



- A 1,48 m  
B 14,8 m  
C 14,8 cm  
D 14 800 mm

(1)

16. Write down the length of the pencil in mm and in cm?



\_\_\_\_\_ mm

\_\_\_\_\_ cm

(2)

17. All the factors of 36 are listed in

- A 1, 2, 3, 6, 8, 12, 18, 36  
B 1, 2, 3, 4, 9, 12, 18, 24  
C 1, 2, 3, 4, 6, 9, 12, 18, 36  
D 1, 2, 3, 6, 9, 16, 18, 36

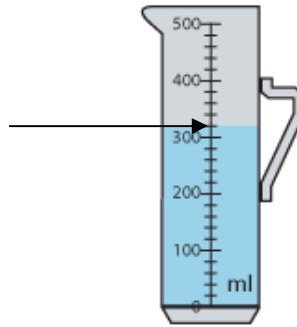
(1)

18. 1, 3, 5, 9, 25, 45, 75 and 225 are factors of 225. Which factor is missing? (1)

19. Write down all the factors of 24. (2)

20. What volume does the arrow on the jug indicate?

- A 301 ml
- B 310 ml
- C 320 ml
- D 3,2 l



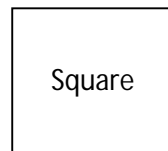
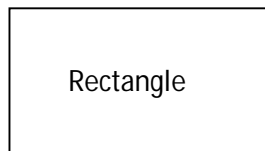
(1)

21. How much water will a full kitchen kettle hold?

- A 1.7 ml
- B 1.7 l
- C 107 l
- D 1.7 kl

(1)

22. Which **one** of the following statements is correct for both shapes?



- A All sides are equal.
- B Both have 4 lines of symmetry
- C Both have 4 parallel sides
- D Diagonals bisect each other.

(1)

23. Write down the name of one shape with:

All four sides equal.

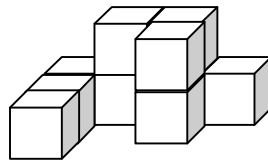
Two pairs of opposite sides equal.

(2)

24. All the sides of a square are equal in length. How do the lengths of sides of a rectangle differ from those of a square

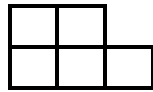
(1)

25. Ten cubes are used to build the 3-D figure as shown below.



Front

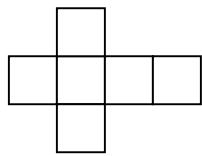
Which view of the figure is shown below?



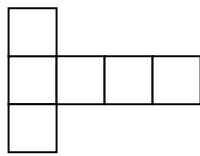
- A Front view
- B Left side view
- C Back view
- D Top view

(1)

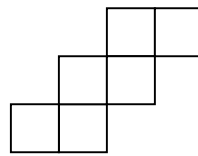
26. Circle the letter of the net that cannot be folded into a cube.



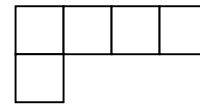
A



B



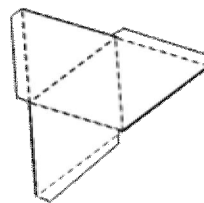
C



D

(1)

27. Into which 3-D object will the following net fold?



(1)

28. Write  $(3 \times 10\,000) + (4 \times 100) + (9 \times 1\,000) + (15 \times 10) + (7 \times 1)$  in the simplest form.

(1)



29. Which number is represented by  $(4 \times 1\,000\,000) + (30 \times 10\,000) + (900) + (7 \text{ tens}) + 5$ ?
- A 43 975  
B 430 975  
C 4 300 975  
D 403 975 (1)
30.  $2\,010 \times (20 + 4) =$  (1)
31. What is the sum of the two smallest prime numbers? (1)
32. Look at the 7 numbers and underline the one that is a prime number:  
33; 34; 35; 36; 37; 38; 39 (1)
33. The prime number in the following list is ...  
19; 21; 33; 39 (1)
34. What is the place value of the underlined digit in  $7\underline{6} 490\,213$ ? (1)
35. What is the place value of the underlined digit in  $45 \underline{6} 78\,921$ ? (1)
36. What is the value of the underlined digit in the following number?  
 $\underline{3}67\,049\,215$
- A 10 000 000  
B 1 000 000  
C 100 000  
D 100 000 000 (1)
37.  $367 + 154\,881 + 27\,954 =$  (2)

$$\begin{array}{r}
 38 \qquad \qquad \qquad 5 \quad 2 \quad 3 \quad 4 \\
 \qquad \qquad \qquad + \quad 4 \quad 1 \quad 4 \quad 2 \quad 3 \\
 \qquad \qquad \qquad + \quad 5 \quad 2 \quad 3 \quad 1 \quad 2 \\
 \hline
 \end{array}
 \qquad (2)$$

39  $423\,456 + 2\,564\,876 + 34\,078 =$  (2)

40  $407\,214 - 94\,397 =$  (2)

41  $6\,830\,132 - 789\,657 =$  (2)

42  $3\,784 - 1\,231 =$  (2)

43  $4\,278 \times 396 =$  (3)

44  $496 \times 387 =$  (3)

45  $9\,434 \div 106 =$  (3)

46  $8\,591 \div 325 =$  (3)

47  $8\,250 \div 50 =$  (3)

48  $2\frac{3}{4} + 3\frac{7}{12} - 1\frac{1}{2} =$  (4)

49  $\frac{25}{36} + \frac{3}{4} =$  (4)

50  $4\frac{2}{3} - 3\frac{7}{9} =$  (4)

51 5% of 160 marks. (2)

52 All the articles in a store are marked down by 25%. What will Thilani pay for a shirt that was marked R200 before the discount? (2)

53  $8,26 + 3,04 - 6,39 =$  (3)

- 54  $5 - 3,64 =$  (1)
- 55 Calculate:  $3 \times (7 - 5) \div (3 + 0) \times 2 =$  \_\_\_\_\_ (1)
- 56 Insert brackets in the following number sentence to make it true.  
 $2 + 5 \times 9 - 4 = 27$  (1)
- 57 Complete:  $9 \times 4 = ( \quad \times 4) + (7 \times 4)$  (1)
- 58  $5 + 4 \times 6 =$  \_\_\_\_\_ (1)
- 59 Mrs. Zungu buys a melon for R3,45 and sells it for R5,50. How much profit does she make by selling two melons? (2)
- 60 Complete: If  $175 + 183 = 358$ , then  $358 - 175 =$  (1)
- 61 Calculate the value of  $x$  if  $x - 41 = 12$  (1)
- 62 Which **one** of the following numbers is not a multiple of 13?  
 65 , 91 , 117 , 139 , 195 , \_\_\_\_\_ (1)
- 63 Which number is not a multiple of 125?  
 A 375  
 B 500  
 C 775  
 D 1 000 (1)
- 64 I have to pack 4 310 apples into boxes. Each box contains 48 apples. How many boxes will I need to pack all the apples? (3)
- 65 Kolishwa invites 50 friends to her party. If each friend can drinks 250 mℓ cool drink, how many 2-litre bottles of cool drink does she need? (3)

66 Complete the table:

PERCENTAGE	DECIMAL FRACTION	COMMON FRACTION
12%		$\frac{3}{25}$
	0,6	$\frac{3}{5}$
65%	0,65	

(3)

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

75%	0,5	25%	0,25	$\frac{3}{4}$
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(2)

68 Rewrite the following numbers as decimals in descending order:

38%	$\frac{3}{8}$	3,8
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(3)

69 Shade the block in which the biggest decimal number is.

3,42	3,02	4,32
4,02	3,04	4,24
3,24	4,4	3,2

(1)

70 Complete the table:

$x$	$y$
1	3
2	7
3	11
8	

(1)

71 Look at this pattern and complete the table.

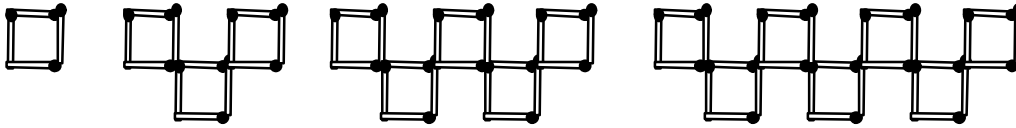
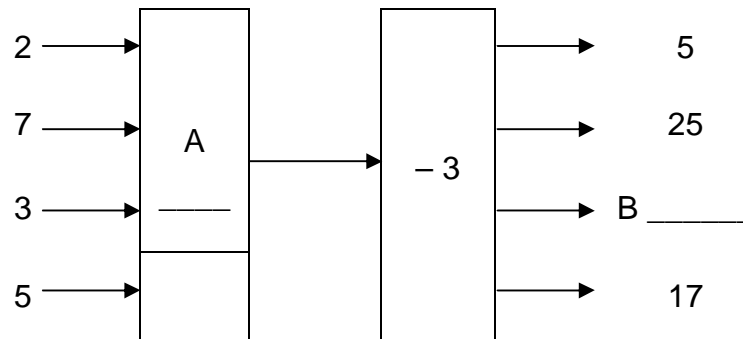


Figure	1	2	3	4	10	25	
Number of squares	1	3	5	7	19		199
Number of matches	4	12	20	28		196	796

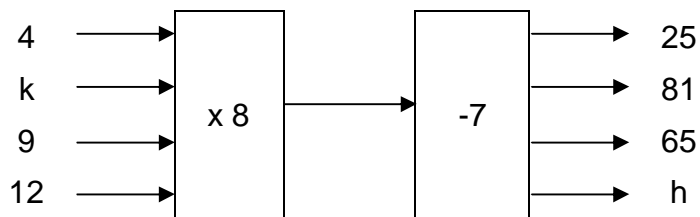
(3)

72 Replace A with a rule and B with a number in the flow diagram below:



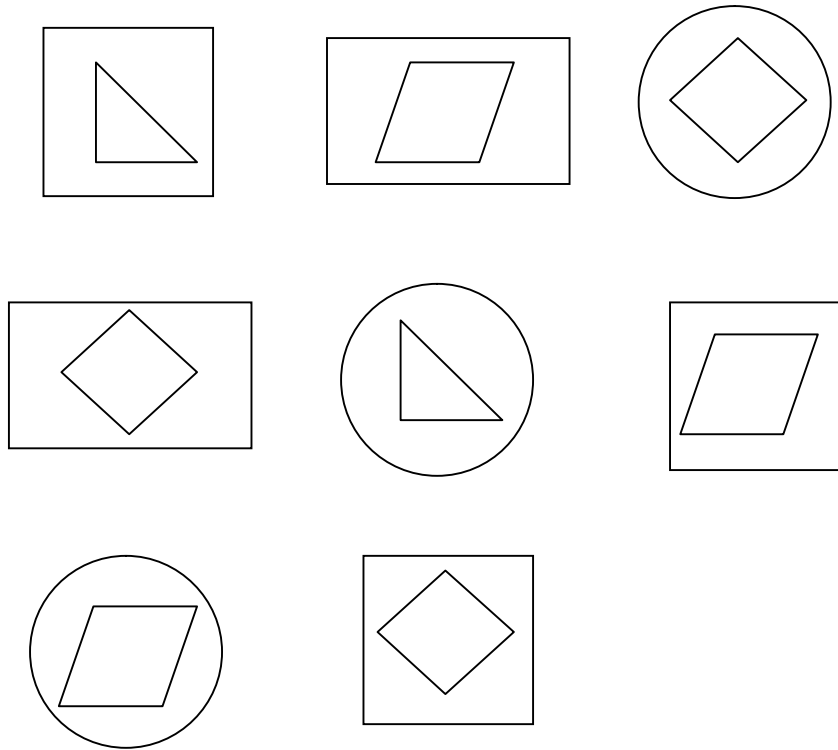
(2)

73 Find the value of h and k in the flow diagram below:



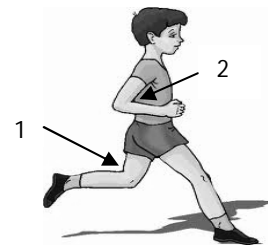
(2)

74 Complete the pattern below:



(2)

75 Identify the angles marked in the drawing below.

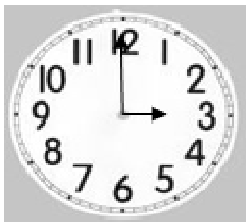


The angle marked 1 is called \_\_\_\_\_

The angle marked 2 is called \_\_\_\_\_

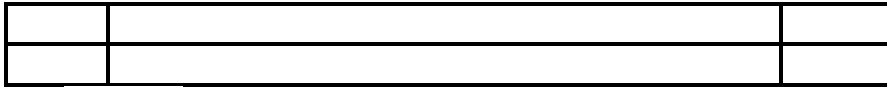
(2)

76 Name the angle made by the hands of the watch



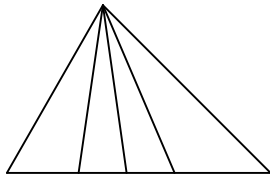
(1)

77 How many rectangles in total are there in the figure below?



(2)

78 The figure below is made up of triangles of different sizes:

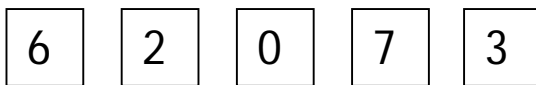


How many triangles are there in this figure?

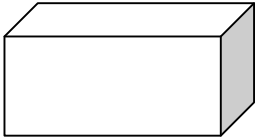
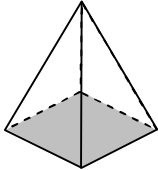
(2)

79 Phiti has five numbered cards. How many different two-digit numbers can she make with these five cards?

(2)

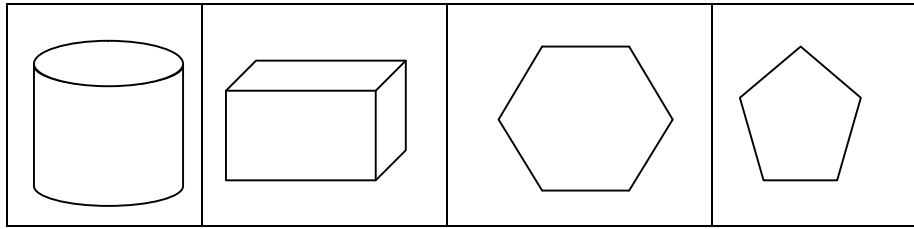


80 Complete the table:

		
Name of 3-D object		Square-based pyramid
Number of vertices		5
Number of edges	12	

(3)

81 Name the shapes



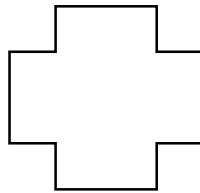
(4)

82 How many lines of symmetry can be drawn on the butterfly below?



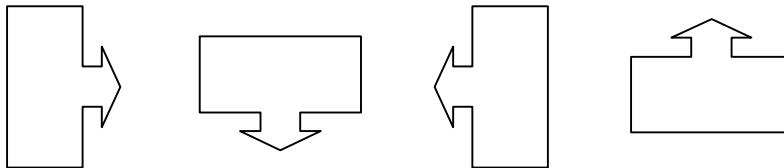
(1)

83 How many lines of symmetry does the diagram below have?



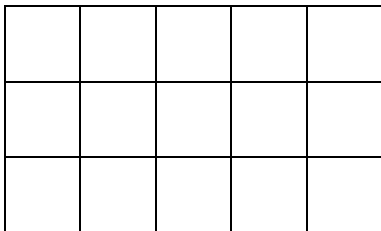
(1)

84 Which kind of transformation is shown here?



(1)

85 Draw an enlargement of the given rectangle to four times its size.



(2)



- 86 The clocks below show the times in different countries. If it is 06.10 p.m. in Berlin, it is 5.10 p.m. in London.

			
CAPE TOWN	LONDON	BANGKOK	BERLIN
	Monday 5.10 p.m.	Monday 12.10 p.m.	Monday 6.10 p.m.

- 86.1 If the clock in Berlin shows Tuesday 9:30 a.m., write down what the time will be in Bangkok? (1)
- 86.2 The time in London is 2 hours behind South Africa. Draw the hands on the clock of the time it will be in Cape Town when it is 5:10 p.m. in London. (1)
- 87 A man leaves Lanseria airport at 7.30 p.m. and arrives in Phuket at 15:45 the next day. How long did the flight take? (3)
- 88 Use this Bus Timetable to answer the questions that follow.

Place	Arrival Time	Departure Time
Durban	08:30	09:00
Bloemfontein	14:40	15:10
Cape Town	05: 00	08:00

- 88.1 How many hours **and** minutes does it take the bus to travel from Durban to Bloemfontein? (1)

Circle the letter of the correct answer.

88.2 How many hours does it take the bus to travel from Durban to Cape Town?

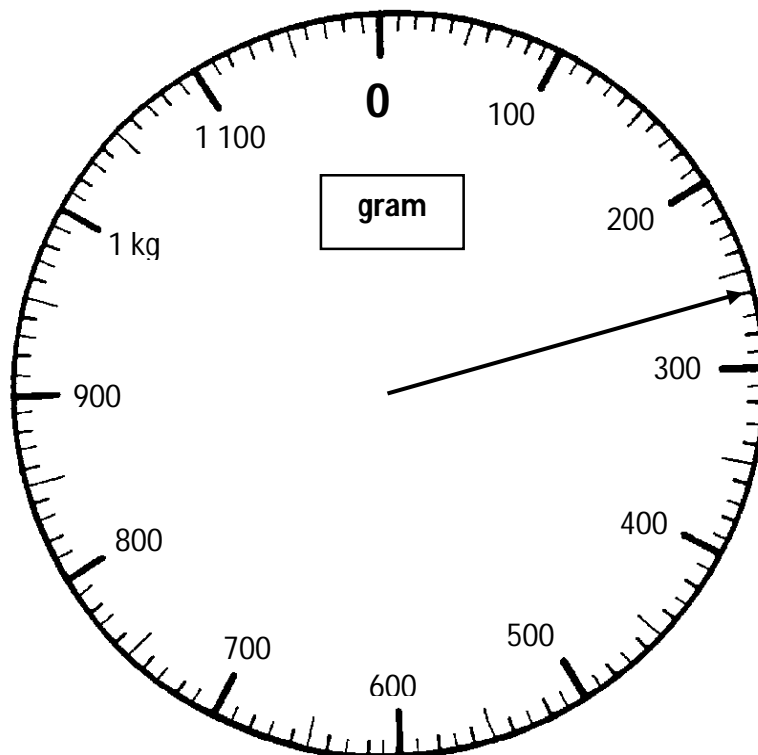
- a. 9
- b. 20
- c. 14
- d. 17

(1)

89 Convert  $5\frac{1}{4}$  litres to mL. \_\_\_\_\_

(2)

90 Refer to the scale below to answer the questions.



90.1 What is the mass indicated on the above scale?

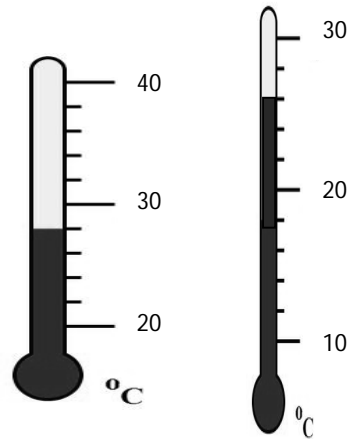
90.2 Convert your answer to kilograms. \_\_\_\_\_ kg

(2)

91 Which **one** of the following is a better buy, 200 g of coffee for R59,90 or 100 g of coffee for R30,95? (2)

92 11 copies of a book cost R330. How much will 6 copies of the same book cost? (3)

93 Use an arrow to indicate the temperature shown on the thermometer of the colder day.

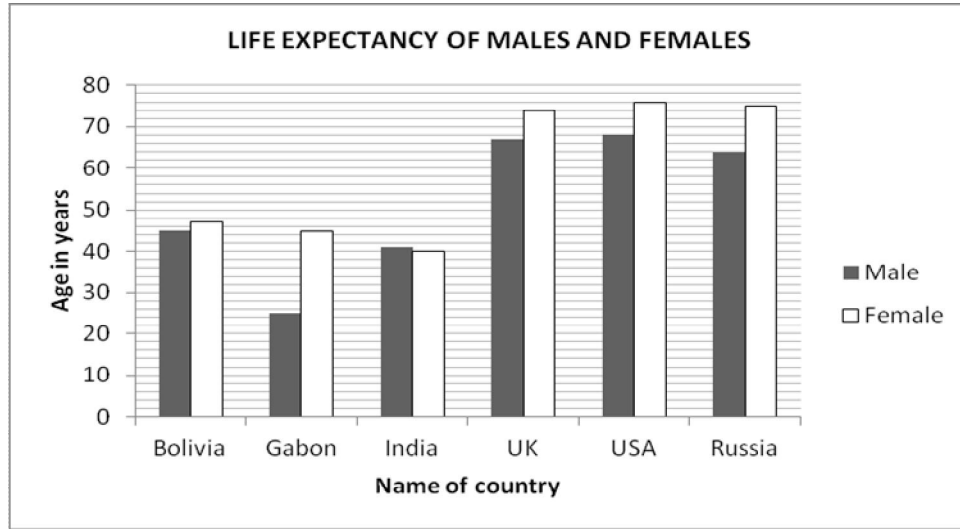


(1)

94 Vusi and Thambo have to divide a 3,6 m rope between them, so that Vusi's piece must be 800 mm longer than Thambo's. What length must each one get? (3)

95 Dr Mololo travels 90 km to the hospital. For every 10 km that she travels, her car uses 2 litres of petrol. How many litres of petrol does the car use to drive to the hospital? (3)

96 Study the double bar graph below and answer the questions that follow.



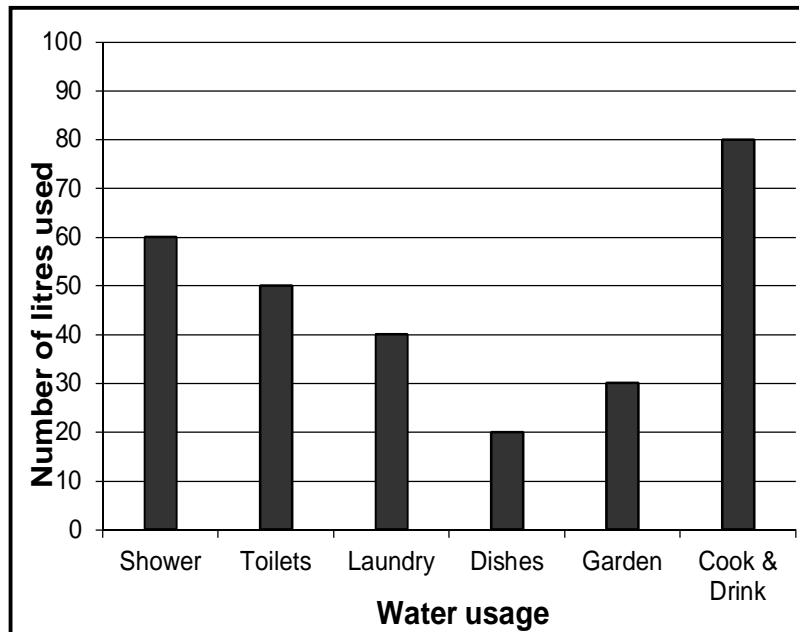
- 96.1 In which country do women have the highest life expectancy? (1)
- 96.2 What is the difference in life expectancy between women and men in Russia? (1)
- 96.3 In general, females are expected to live longer than males. In which country is this not so? (2)
- 96.4 What is the ratio of life expectancy of males in Gabon to females in Russia? (2)

97 Complete the table.

FAVOURITE COLOUR	TALLY MARKS	FREQUENCY
Red	### ## //	
Pink		7

(2)

- 98 The following graph represents water usage of one household per week. Use the information in the graph to answer the following questions.



(2)

- 98.1 How many litres of water does the household use to shower and garden?
- 98.2 What is the difference between this household's water usage of dishes and cook & drink?

- 99 What is the mode of the given set of numbers?

43; 49; 47; 43; 41; 48; 43; 46

(1)

- 100 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 modal score?

(1)