

NumberSense Assessment Portfolio – Grade 5

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Name: _____

Class: _____

- You should complete this assignment in class and work alone.
- Complete all answers on this question paper.
- You may use your NumberSense Workbook or any other Mathematics notes to help you, but you should not use a calculator.
- You should complete this assignment in no more than 40 minutes.
- This assignment is for 25 marks.

1. One rugby ball costs R62.



- How much will 4 rugby balls cost? R_____ (1)
- How much will 20 rugby balls cost? R_____ (1)
- How much will 500 rugby balls cost? R_____ (1)
- What is 62×524 ? Show your thinking.

R_____ (2)

2. Riley mixes 3 litres of blue paint with 5 litres of white paint to make a paler shade of blue paint.



a. Complete.

Litres of blue paint	3	6	9	12	15	
Litres of white paint	5	10				50

(2)

b. How many litres of blue paint does Riley need to mix with 100 litres of white paint? Show your thinking.

_____ litres (2)

- c. How many litres of blue paint does Riley need to mix with 1 litre of white paint? Show your thinking.

_____ litres (2)

- d. How many litres of white paint does Riley need to mix with 36 litres of blue paint? Show your thinking.

_____ litres (2)

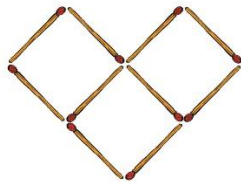
- e. How many litres of blue and white paint must he mix to make 64 litres of the paler blue paint? Show your thinking.

_____ litres of blue paint and _____ litres of white paint (2)

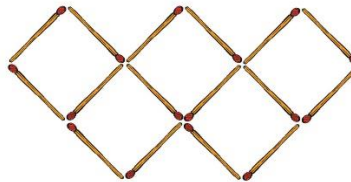
3. Zoliswa makes pictures with matches like this. The first three pictures make a pattern.



Picture 1



Picture 2



Picture 3

- a. Draw the fourth picture in the pattern.

(1)

- b. Complete the table.

Picture number	1	2	3	4	5	6	8
Number of matches	4	10			28		

(3)

- c. Zoliswa needs to calculate how many matches she will need for picture 10. Which of these methods will work? Select all the correct options.

☐ There are 28 matches in picture 5, so I can double 28 matches.

☐ There are 28 matches in picture 5, so I add 6×5 to 28 matches.

☐ Picture 1 has 4 matches and 6 matches are added for each new picture, so I work out $10 \times 6 - 2$ matches. (2)

- d. Draw a flow diagram that you can use to calculate the number of matches for any picture number. One has been started for you.

Picture number \rightarrow  (2)

- e. Use the flow diagram to determine which Picture number can be made using exactly 88 matches. Show your thinking

Picture _____ (2)

Investigation

Developing a square-based box with the greatest volume from a square piece of cardboard.

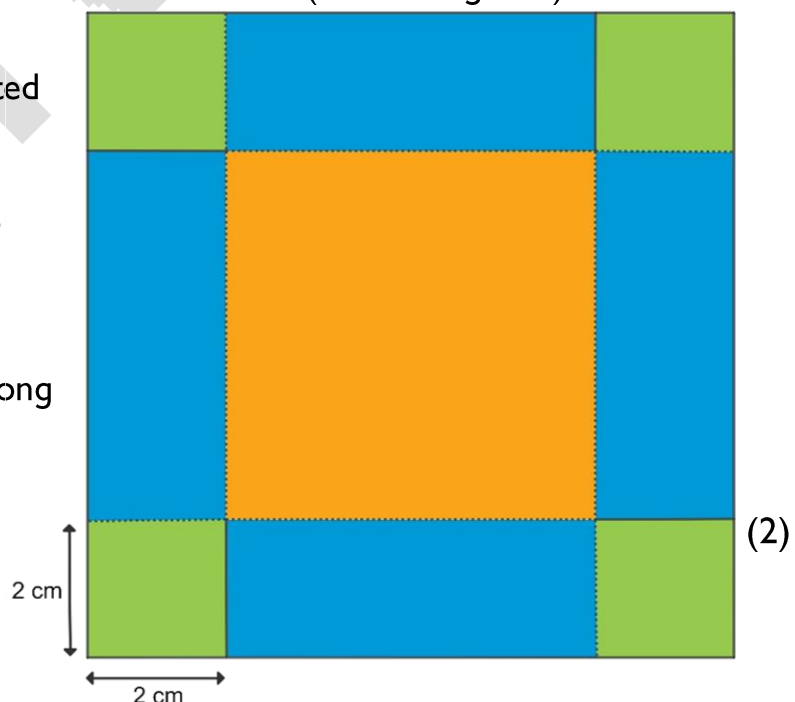
Instructions:

- Complete this investigation in class working alone.
- You will need:
 - glue (and/or sticky tape)
 - a pair of scissors
 - a calculator
- You may use your NumberSense Workbook or any other notes to help you.
- This investigation is for 30 marks.
- Time allocation: 2 hours

1. Investigation 1: 18 cm by 18 cm cardboard square.

- a. Cut out five squares 18 cm by 18 cm from light cardboard.
- b. Follow these instructions to make a box using one of your square pieces of card.

- Draw a 2 cm square on each corner (shown in green).
- Join the corner squares with dotted lines.
- Make a 2 cm cut along one side of each square (shown in bold).
- Score and fold along the dotted lines.
- Glue the flaps.



- c. Determine the volume of the box that you have just made in cubic centimetres. Show your thinking.

Refer to NumberSense Workbook 20, page 62 if you need help. (2)

- d. For each of the other four square pieces, make boxes with 1, 3, 4 and 5 cm cuts and determine the volume for each.

Record your results in a table like this:

Length of cut	Calculation	Volume of box (cm ³)
1 cm		
2 cm		
3 cm		
4 cm		
5 cm		

(5)

- e. Which box has the largest volume?

(1)

- f. What do you notice about the way the volume changes as the length of the cut on the corners increases?

(1)

- g. Determine a rule that you can use to calculate the volume of a box made from a 18 cm square and any sized square cut from its corners.

(2)

- h. Use your rule to confirm that the box that has the largest volume in the table is the largest box by calculating the volume of the boxes made with the following sized squares cut from the corners:

- 2,5 cm square cut from corners and
- 3,5 cm square cut from corners

Show your thinking.

(3)

- i. How many times longer is the length of the side of the original square than the length of the side of the square that you have cut from the corner for the box with the greatest volume? Explain your answer (2)

2. Investigation 2: 24 cm by 24 cm cardboard square.

- a. Determine a rule that you can use to calculate the volume of a box made from the 24 cm square for any sized square cut from the corners. (1)
- b. Investigate how the length of the side of the squares that you cut from the corners of the 24 cm square piece of cardboard impacts on the volume of the box.

Record your results in a table like the one in question 1d.
Which box has the largest volume? (3)

3. Investigation 3: 45 cm by 45 cm cardboard square.

- a. Determine a rule that you can use to calculate the volume of a box made from the 45 cm square for any sized square cut from the corners. (1)
- b. Investigate how the length of the side of the squares that you cut from the corners of the 45 cm square piece of cardboard impact on the volume of the box.

Record your results in a table like the one in question 1d.
Which box has the largest volume? (3)

4. What do you notice about the relationship between the length of the side of the square cardboard and the length of the side of the square that you have cut from the corner for the box with the greatest volume? Explain your observation. (2)

5. Without doing an investigation, predict the length of the square cut from a 60 cm square that creates the largest volume. Explain your thinking. (2)

Name: _____

Class: _____

- Complete all answers on this question paper.
- Calculators may not be used.

1. List the first three multiples of 45.

_____ (1)

2. Write $\frac{4}{10}$ as an equivalent decimal fraction.

_____ (1)

3. Round:

a. 284 to the nearest 10.

_____ (1)

b. 486 to the nearest 5.

_____ (1)

4. Complete. *Fill in the answer only.*

a. $145 + 214 + 55 + 36 =$ _____ (1)

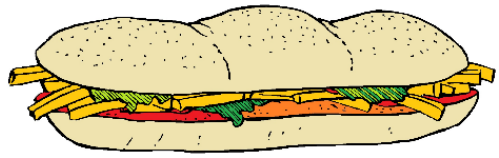
b. $6,5 + 2,7 =$ _____ (1)

c. $R16,98 + R5,99 = R$ _____ (1)

d. $6 \times 7 =$ _____ (1)

e. $5 - \frac{1}{8} =$ _____ (1)

f. $\frac{1}{5}$ of 40 = _____ (1)



5. A gatsby is cut into three equal pieces.

a. What fraction of the gatsby is each piece?

(1)

b. Each piece is cut into two equal pieces. What fraction of the gatsby is each new piece?

(1)

6. Mrs Manga bakes tarts using $1\frac{1}{4}$ cups of sugar. How much sugar does she need to make 10 tarts? Show your thinking.

_____ cups (2)

7. Thembi mixes 2 litres of blue paint with 5 litres of yellow paint to make green paint.

a. How much yellow paint should Thembi mix with 8 litres of blue paint to make the same green paint?

_____ litres (1)

b. How much blue paint should he mix with 1 litre of yellow paint to make the same green paint?

_____ litres (1)

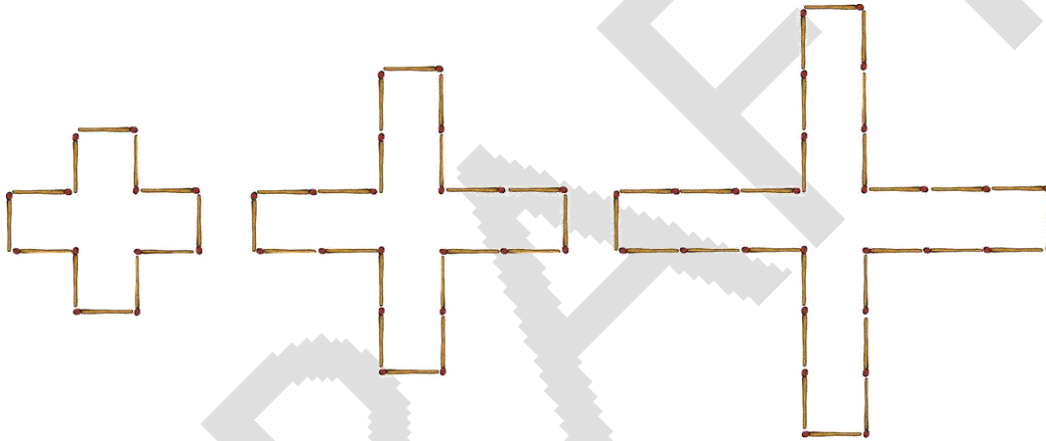
c. Thembi needs to make 21 litres of this green paint. How much blue and yellow paint should he use? Show your thinking.

_____ litres of blue paint and _____ litres of yellow paint. (2)

8. When Mark arrives at the garage, his car's petrol gauge shows that the petrol tank is $\frac{1}{8}$ full. After putting in 25 litres of petrol, the gauge reads $\frac{5}{8}$ full. How many litres does the petrol tank hold when full? Show your thinking.

_____ litres (2)

9. Vusi makes pictures with matches like this. The first three pictures make a pattern.



Picture 1

Picture 2

Picture 3

- a. Complete the table for the number of matches in each picture.

Picture number	1	2	3	4	5
Number of matches	12	20	28		

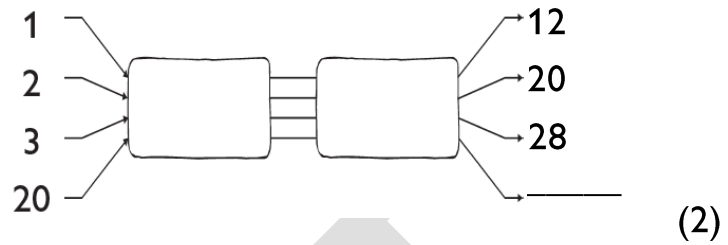
(1)

b.



For picture 1, I need $1 \times 8 + 4 = 12$.
For picture 2, I need $2 \times 8 + 4 = 20$.

Use Vusi's method to complete the flow diagram for this pattern.



10. Extend each pattern.

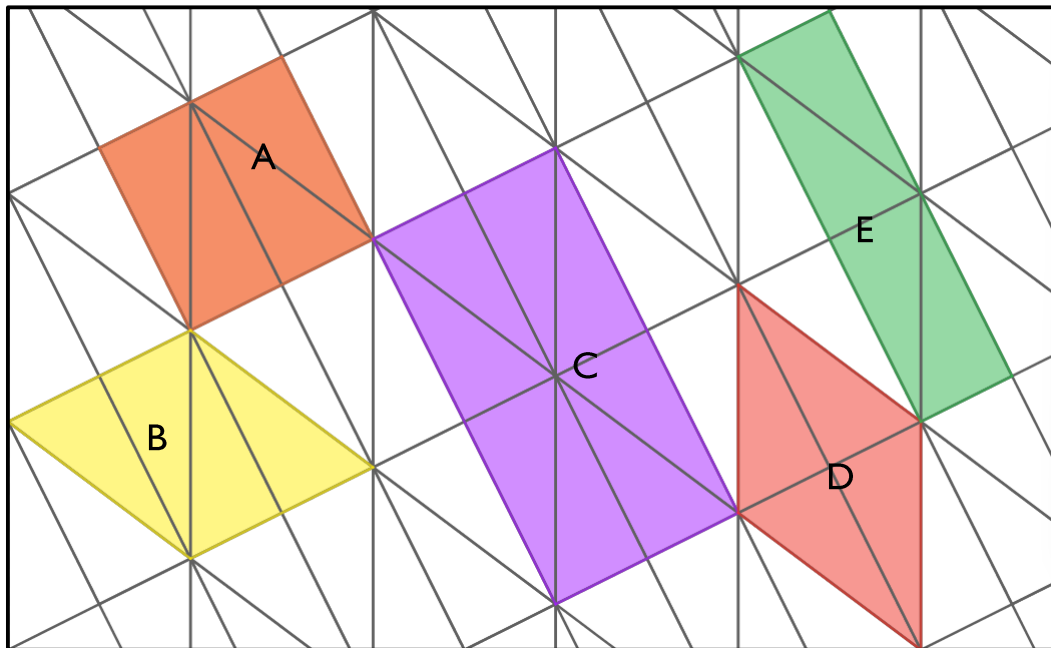
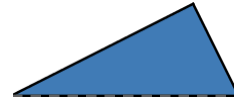
a.



b.



11. Thato tessellated this triangle as shown. He noticed that when he tessellated the triangle, he made new quadrilaterals and labelled some of these A to E.



- a. Which of the quadrilaterals that Thato labelled are rectangles? Select all that apply.

☐ A

☐ B

☐ C

☐ D

☐ E

(1)

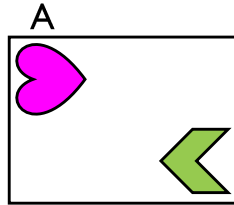
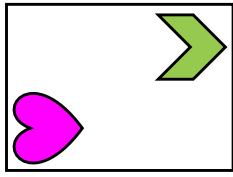
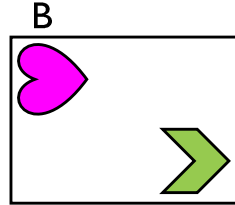
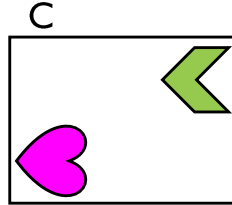
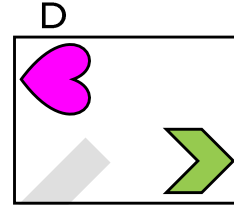
- b. Thato claims that the opposite sides of quadrilateral B are equal. Is Thato correct? Justify.

(1)

- c. Clearly indicate all the lines of symmetry on quadrilateral C.

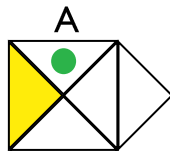
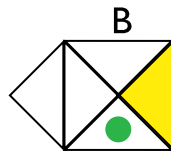
(1)

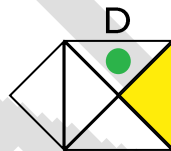
12. Which card is a reflection of this card? Select the correct one.

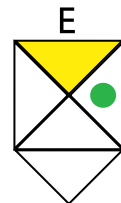

☐ A

☐ B

☐ C

☐ D

(1)

13. A figure is rotated (but not reflected). The images below show the figure in different positions, but one figure is incorrect. Which figure is incorrect? Select one.


☐ A

☐ B

☐ C

☐ D

☐ E


(1)

14. What is the 24-hour time for 7:25 pm? _____

(1)

15. Thembi and Sara run a 15 km race. Thembi finished the race in 01:15:32 and Sara finished the race in 01:12:15. How long before Thembi finished did Sara finish? Show your thinking.

(2)

16. A watch gains 30 seconds every six hours. How many minutes will it gain in a week? Show your thinking.

_____ minutes (2)

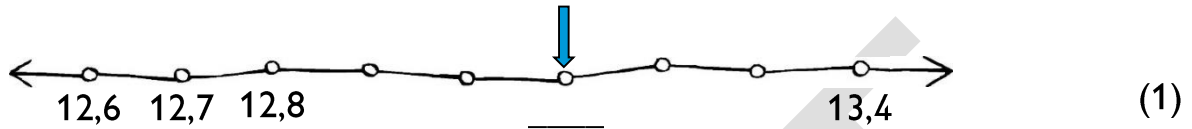
DRAFT

Name: _____

Class: _____

- Complete all answers on this question paper.
- Calculators may not be used.

1. Determine the value indicated by the arrow.



2. Which numbers are:

a. multiples of 8? Select all.

☐ 1 ☐ 4 ☐ 16 ☐ 18 ☐ 24 (1)

b. prime numbers? Select all.

☐ 2 ☐ 3 ☐ 5 ☐ 9 ☐ 19 (1)

3. Round 8 485 off to the nearest 1 000. _____ (1)

4. Complete. Fill in the answer only.

a. $10\,050 + 50 =$ _____ (1)

b. $17,6 +$ _____ $= 20$ (1)

c. $2\frac{1}{8} + \frac{5}{8} =$ _____ (1)

d. $5\,200 - 1\,400 =$ _____ (1)

e. $52\,346 -$ _____ $= 50\,346$ (1)

f. $R10 - R2,45 = R$ _____ (1)

g. $6 \times 5 =$ _____ (1)

h. $6,7 \times 10 = \underline{\hspace{2cm}}$ (1)

i. $11 \div 10 = \underline{\hspace{2cm}}$ (1)

5. Calculate. Show your thinking.

47×8

(2)

6. A pizza costs R75. How many pizzas can you buy with R500? Show your thinking.

 pizzas (2)

7. Mrs Twala uses $\frac{4}{5}$ m of fabric to make one bag. How much fabric does she need to make 15 bags? Show your thinking.

 m (2)

8. One metre ribbons are cut into different sized pieces. Which piece is longer, $\frac{2}{3}$ m or $\frac{3}{5}$ m? Select one.

☐ $\frac{2}{3}$ m

☐ $\frac{3}{5}$ m



(1)

9. The time taken for 6 boys to complete a 100 m sprint is given in seconds. Which boy was third fastest?

David	11,9 s	Mike	11,59 s
Solly	11,63 s	Ben	11,23 s
Pete	11,4 s	Loyiso	11,32 s

(1)

10. Half the flowers at a Flower Show are South African. 2-thirds of the South African flowers are roses.

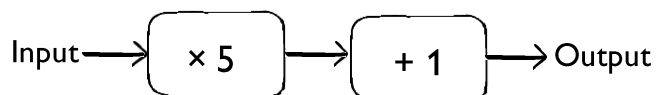
If there are 72 flowers at the Flower Show, how many are South African roses? Show your thinking.

_____ South African roses (2)

11. The desks in a classroom are arranged in straight rows with the same number of desks in each row. Unless someone is absent, each desk is filled. Mary is in the second row from the front and the fourth row from the back. She is also the third student from the left end of the row and the fifth student from the right. How many learners are in the class? Show your thinking.

_____ learners (2)

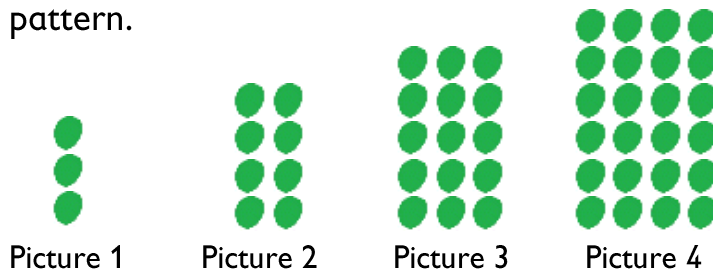
12. Use the flow diagram to complete the table.



Input	1	2	3	4	5
Output					

(2)

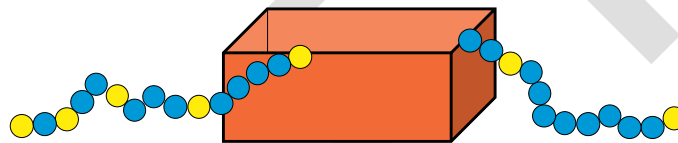
13. Adila makes pictures with dots like this. The first 4 pictures make a pattern.



How many dots will there be in Picture 5?

_____ dots (1)

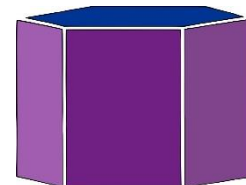
14. This string of beads is made following a specific pattern.



How many beads are hidden inside the box? Show your thinking.

_____ beads (2)

15. This polyhedron is constructed from the GeoGenius Construction Kit.



- a. What is the name of this polyhedron? Select the correct one.



tetrahedron



hexagon



hexagonal-based prism



hexagonal-based pyramid



rectangular-based prism



cylinder

(1)

- b. How many vertices does this polyhedron have?

_____ vertices (1)

16. This polyhedron is called an icosahedron. It is made from 20 equilateral triangles only. Without building it, determine how many edges the icosahedron has. Show your thinking.

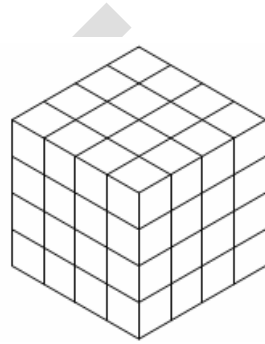


_____ edges

(2)

17. 64 small cubes are stacked together to create a larger cube as shown. The larger cube is then painted blue.

How many of the small cubes will now have exactly two faces painted blue?



_____ small cubes

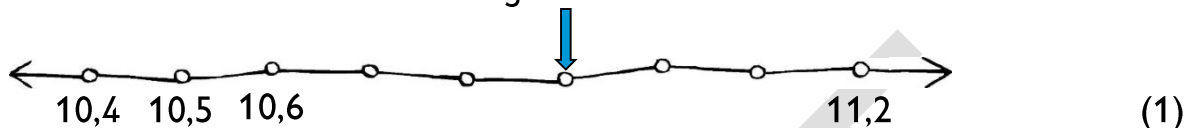
(1)

Name: _____

Class: _____

- Complete all answers on this question paper.
- Calculators may not be used.

1. Determine the value indicated by the arrow.



2. Which numbers are multiples of 15? Select all that apply.

- ☐ 5
 ☐ 10
 ☐ 15
 ☒ 35
 ☒ 60
- (1)

3. a. 651 to the nearest 100. _____ (1)

b. 68 to the nearest 5. _____ (1)

4. a. Write 5,7 as a number with a common fraction. _____ (1)

b. Write $8\frac{1}{5}$ as a decimal fraction. _____ (1)

5. Complete. *Fill in the answer only.*

a. $164 + 49 =$ _____ (1)

b. $\frac{3}{5} + \frac{4}{5} =$ _____ (1)

c. $46\,285 - \underline{\hspace{2cm}} = 40\,285$ (1)

d. $12,1 - 5,6 =$ _____ (1)

e. $8 \times 5 =$ _____ (1)

f. $27 \div 10 =$ _____ (1)

6. Calculate. Show your thinking.

a. $R3,75 + R4,60 + R6,25$

R_____ (2)

b. 63×7

(2)

c. $\frac{5}{8}$ of R400

R_____ (2)

7. Mr Khumalo makes a toy bicycle using $2\frac{1}{4}$ m of wire. If he buys a roll of 50 metres of wire, how many toy bicycles can he make? Show your thinking.

_____ bicycles (2)

8. Two-fifths of the learners in a class are girls. There are 12 girls in the class. How many learners are there in the class? Show your thinking.

_____ learners (2)

9. Piet, Dan and Sindi have 220 stamps altogether. Piet has twice as many stamps as Dan. Sindi has 40 stamps. How many stamps does Dan have? Show your thinking.

_____ stamps (2)

10. Use the flow diagram to complete the table.



Input	1	2	3	5
Output				

(2)

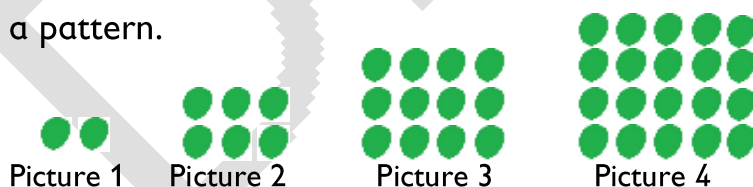
11. Use the table to complete the flow diagram.

Input	1	2	3	4	5	8
Output	10	14	18	22	26	38



(2)

12. Piet makes pictures with dots like this. The first four pictures make a pattern.

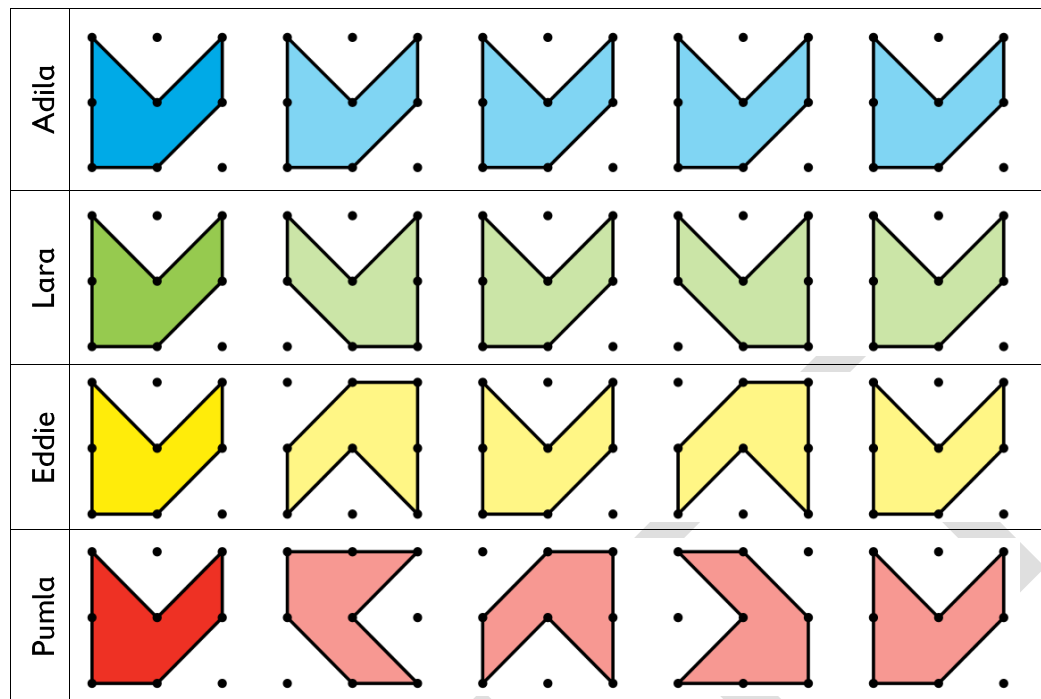


How many dots would Piet use to make picture 50? Show your thinking.

_____ dots (2)

Adila, Lara, Eddie and Pumla are making patterns with a shape.

13.



a. What did Adila do to the shape to make her pattern?

☐ Translated it ☐ Reflected it ☐ Rotated it (1)

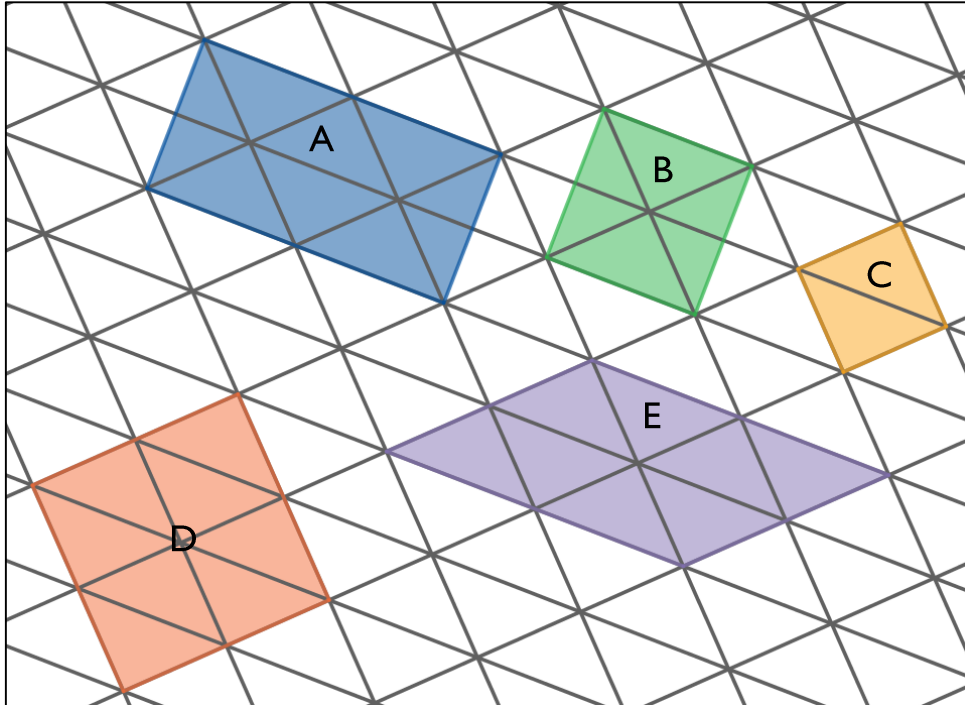
b. What did Lara do to the shape to make her pattern?

☐ Translated it ☒ Reflected it ☐ Rotated it (1)

c. Eddie and Pumla both rotated the shape to make their pattern. Explain what they did differently to make the patterns look different.

(2)

14. Thato tessellated this triangle as shown. He noticed that when he tessellated the triangle, he made new quadrilaterals and labelled some of these A to E.



- a. Which of the quadrilaterals that Thato labelled are squares?
Select all that apply.

☐ A

☐ B

☐ C

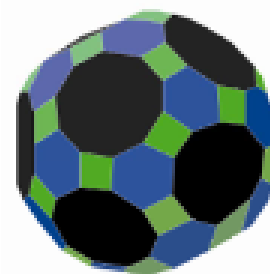
☐ D

☐ E

(1)

- b. Clearly indicate all the lines of symmetry on quadrilateral D. (1)

15. This polyhedron is made using 12 decagons (10-sided polygon), 20 hexagons, a number of squares and 180 elastics (i.e. it has 180 edges). Calculate how many squares are used. Show your thinking. *NB: You should NOT construct it.*



_____ squares (3)

What time is the clock showing? Select all the correct options.



16.

☐ 5 minutes to 7 pm

☐ 55 minutes past 18 pm

☐ 6:55 pm

☐ 18:55 am

☐ 18:55 pm

☐ 7:55 pm

(1)

17. A train departs from Bellville station at 09:57 and arrives in Cape Town at 10:28. Another train on the same route leaves Bellville at 12:40. At what time does it arrive in Cape Town? Show your thinking.

_____ (2)

18. Complete.

a. 3 kg = _____ g

(1)

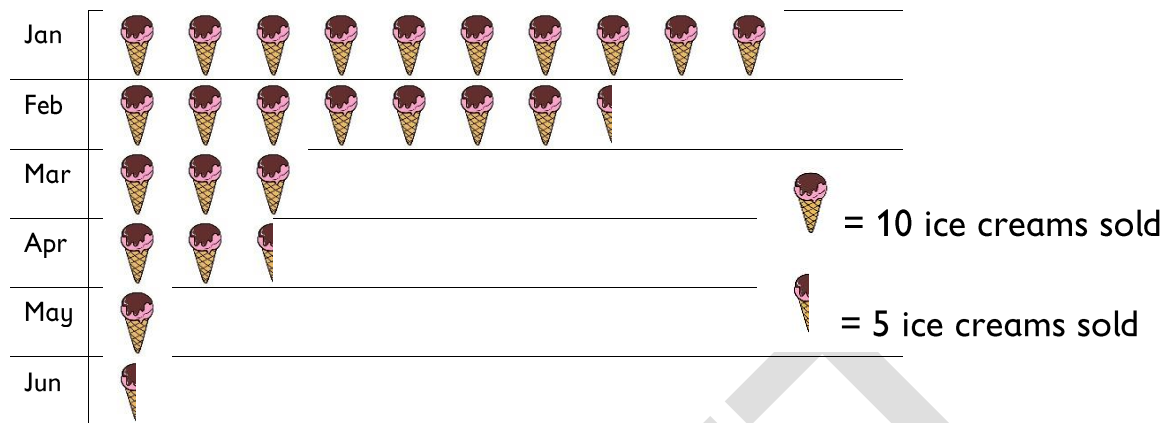
b. _____ m = 125 cm

(1)

19. Thabo forgot to take off his shoes when he got onto the scale to weigh himself. The scale showed 41 kg. He then weighed his two shoes and found that they weighed 725 g. How much does Thabo weigh without his shoes? Show your thinking.

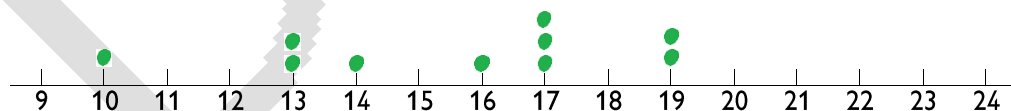
_____ (2)

20. Selwyn recorded the number of ice creams that he sold each month for the first half of the year as a pictograph.



- a. In which month were the most ice creams sold? (1)
- b. In July, Selwyn sold 20 ice creams. How many stamps (pictures of ice cream) would he add to the next row of his pictograph? _____ stamps (1)
- c. How many ice creams were sold in March? Complete.
More than _____ ice creams, but less than _____ ice creams (1)

21. Determine the mode of the data represented on the dot plot.



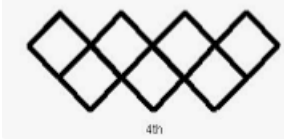
(1)

To prepare for this assessment, learners should have completed NumberSense Workbook 17, pages 1 – 37.

Memo:

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation														
1.a.	248	1 mrk: correct <i>Mentally double and double again</i>	NOR	17.7, 17.15, 17.34	K	(1)														
1.b.	1240	1 mrk: correct <i>Mentally double and put a zero on the end</i>	NOR		K	(1)														
1.c.	31000	1 mrk: correct <i>Mentally halve and put 3 zeroes on the end</i>	NOR		K	(1)														
1.d.	32488 <i>Possible working:</i> $31000 + 1240 \rightarrow 32240 + 248 \rightarrow 32488$	1 mrk: correct 1 mrk: valid working <i>Carry accuracy from 5a, b & c</i>	NOR		A	(2)														
2.a.	<table border="1"> <tr> <td>L of blue paint</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>30</td></tr> <tr> <td>L of white paint</td><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td><td>50</td></tr> </table>	L of blue paint	3	6	9	12	15	30	L of white paint	5	10	15	20	25	50	2 mrks: all 4 correct or 1 mrk: 2 or 3 correct	NOR	17.3; 17.12	A	(2)
L of blue paint	3	6	9	12	15	30														
L of white paint	5	10	15	20	25	50														

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
2.b.	<p>60</p> <p><i>Possible working from table:</i></p> <ul style="list-style-type: none"> 10L of white is mixed with 6 litres of blue. $10 \times 10 = 100$, so $6 \times 10 = 60$ 50L of white is mixed with 30 litres of blue. Double 50 = 100, so double 30 = 60 	<p>1 mrk: correct</p> <p>1 mrk: valid working</p>	NOR	17.3; 17.12	A	(2)
2.c.	<p>$\frac{3}{5}$ or 0,6</p> <p><i>Possible working:</i></p> <ul style="list-style-type: none"> $3L = 3000mL$. $3000 \div 5 = 600mL = 0,6L$ $3L \div 5 = \frac{3}{5}L$ 	<p>1 mrk: correct</p> <p>1 mrk: valid working</p>	NOR	17.3; 17.12	R	(2)
2.d.	<p>60</p> <p><i>Possible working from table:</i></p> <ul style="list-style-type: none"> $36 = 30 + 6$, and $50 + 10 = 60$ $36 = 12 \times 3$ and $20 \times 3 = 60$ 	<p>1 mrk: correct</p> <p>1 mrk: valid working</p>	NOR	17.3; 17.12	A	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation																
2.e.	24 and 40 Possible working: <ul style="list-style-type: none">From the table: 12L blue + 20L white = 32L pale blue and 64 = <i>double</i> 32 ∴ 200L blue + 80L white = 280L pale blue64 ÷ 8L = 8. 3 × 8 = 24 and 5 × 8 = 40	1 mrk: correct 1 mrk: valid working	NOR	17.3; 17.12	R	(2)																
3.a.		1 mrk: correct	PFA	17.4; 17.5; 17.25; 17.33	K	(1)																
3.b.	<table><tr><td>Picture number</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>8</td></tr><tr><td>No. of matches</td><td>4</td><td>10</td><td>16</td><td>22</td><td>28</td><td>34</td><td>46</td></tr></table>	Picture number	1		2	3	4	5	6	8	No. of matches	4	10	16	22	28	34	46	1 mrk: 16 and 22 1 mrk: 34 1 mrk: 46	PFA	K&A	(3)
Picture number	1	2	3		4	5	6	8														
No. of matches	4	10	16	22	28	34	46															
3.c.	<input type="checkbox"/> There are 28 matches in picture 5, so I can double 28 matches. <input checked="" type="checkbox"/> There are 28 matches in picture 5, so I add 6 × 5 to 28 matches. <input checked="" type="checkbox"/> Picture 1 has 4 matches and 6 matches are added for each new picture, so I work out 10 × 6 – 2 matches.	2 mrks: both correct and no other or 1 mrk: 1 correct and no other or both correct and extra	PFA	R	(2)																	

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
3.d.	<i>Picture number $\rightarrow \times 6 \rightarrow -2 \rightarrow$ No. of matches</i>	1 mrk: $\times 6$ 1 mrk: -2 <i>Marks should only be awarded if in the correct order</i>	PFA		A	(2)
3.e.	15 <i>Possible thinking:</i> • $88 + 2 \rightarrow 90 \div 6 \rightarrow 15$	1 mrk: correct 1 mrk: valid thinking	PFA		R	(2)

To prepare for this assessment, learners should have completed NumberSense Workbook 20, pages 61 – 64.

The teacher may help learners to make the first box. It is important that they understand how the box is made in order to complete the investigation.

Teachers may also need to help learners with question 1g. If they don't have this rule, continuing the investigation will be very difficult. If teachers do help children with this, then this mark should be forfeited.

Learners should be able to use a calculator as they have not yet learned how to multiply decimal fractions mentally.

Memo:

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.b.	Box	2 mrks: box accurately and neatly constructed OR 1 mrk: box constructed, but lacks accuracy or neatness.	SS		A	(2)
1.c.	392 cm ³ <i>Possible thinking:</i> <ul style="list-style-type: none"> 2 layers with 14 rows of 14 cubes per row 14 × 14 × 2 	1 mrk: correct 1 mrk: valid thinking	M	20.61; 20.62; 20.63; 20.64	A	(2)

Ques	Correct solution(s)			Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.d.	Length of cut	Calculation	Volume of box (cm ³)	1 mrk: EACH volume correct and 1 mrk: valid calculation	M	20.61; 20.62; 20.63; 20.64	A	(5)
	1 cm	$16 \times 16 \times 1$	256					
	2 cm							
	3 cm	$12 \times 12 \times 3$	432					
	4 cm	$10 \times 10 \times 4$	400					
	5 cm	$8 \times 8 \times 5$	320					
1.e.	The box made by cutting 3 cm squares from the corners.			1 mrk: identifying largest box	M		K	(1)
1.f.	The volume of the box starts to increase as the length of the cut on the corners increases, but then after a 3 cm cut it decreases again.			1 mrk: valid observation about increasing and then decreasing volume	PFA		A	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.g.	<p>Volume = (18 minus 2 times length of square cut) \times (18 minus 2 times length of square cut) \times length of square cut</p> <p>Volume = $(18 - 2 \times \text{length of square cut}) \times (18 - 2 \times \text{length of square cut}) \times \text{length of square cut}$</p>	<p>2 mrks: complete and correct</p> <p>OR</p> <p>1 mrk: partly correct</p> <p><i>Note: It is easier to write this algebraically, but children have not been introduced to this yet. If the length of the square cut is s, then:</i></p> <p><i>volume = $(18 - 2s)^2 \times s$ or volume = $s(18 - 2s)^2$</i></p>	PFA	19.24; 20.37	R	(2)
1.h.	<p>$V = (18 - 2 \times 2,5) \times (18 - 2 \times 2,5) \times 2,5$ $= 13 \times 13 \times 2,5$ $= 422,5 \text{ cm}^3$</p> <p>$V = (18 - 2 \times 3,5) \times (18 - 2 \times 3,5) \times 3,5$ $= 11 \times 11 \times 3,5$ $= 423,5 \text{ cm}^3$</p>	<p>1 mrk: each correct and</p> <p>1 mrk: using the rule</p>	PFA &NOR		A	(3)
1.i.	6 times, because $3 \text{ cm} \times 6 = 18 \text{ cm}$	<p>1 mrk: correct</p> <p>1 mrk: valid explanation</p>	NOR		A	(2)

Ques	Correct solution(s)			Comment	Content area	Page ref.	Cognitive domain	Mark allocation																												
2.a.	Volume = (24 – 2 × length of square cut) × (24 – 2 × length of square cut) × length of square cut			1 mrk: correct	PFA		A	(1)																												
2.b.	<table><tr><th>Length of cut (cm)</th><th>Calculation</th><th>Volume (cm³)</th></tr><tr><td>1</td><td>22 × 22 × 1</td><td>484</td></tr><tr><td>2</td><td>20 × 20 × 2</td><td>800</td></tr><tr><td>3</td><td>18 × 18 × 3</td><td>972</td></tr><tr><td>4</td><td>16 × 16 × 4</td><td>1 024</td></tr><tr><td>5</td><td>14 × 14 × 5</td><td>980</td></tr><tr><td>6</td><td>12 × 12 × 6</td><td>864</td></tr><tr><td>3,5</td><td>17 × 17 × 3,5</td><td>1 011,5</td></tr><tr><td>4,5</td><td>15 × 15 × 4,5</td><td>1 012,5</td></tr></table>	Length of cut (cm)	Calculation	Volume (cm ³)	1	22 × 22 × 1	484	2	20 × 20 × 2	800	3	18 × 18 × 3	972	4	16 × 16 × 4	1 024	5	14 × 14 × 5	980	6	12 × 12 × 6	864	3,5	17 × 17 × 3,5	1 011,5	4,5	15 × 15 × 4,5	1 012,5				3 mrks: 4 cm with valid, logical argument OR 2 mrks: 4 cm with partial, logical argument OR 1 mrk: 4 cm with no argument given OR volumes correctly calculated, but no conclusion about largest volume.	M		A	(3)
Length of cut (cm)	Calculation	Volume (cm ³)																																		
1	22 × 22 × 1	484																																		
2	20 × 20 × 2	800																																		
3	18 × 18 × 3	972																																		
4	16 × 16 × 4	1 024																																		
5	14 × 14 × 5	980																																		
6	12 × 12 × 6	864																																		
3,5	17 × 17 × 3,5	1 011,5																																		
4,5	15 × 15 × 4,5	1 012,5																																		
3.a.	Volume = (45 – 2 × length of square cut) × (45 – 2 × length of square cut) × length of square cut			1 mrk: correct	PFA		A	(1)																												

Ques	Correct solution(s)				Comment	Content area	Page ref.	Cognitive domain	Mark allocation
3.b.	Size of square in corner (cm)	Calculation	Volume (cm ³)		3 mrks: 7,5 cm with valid, logical argument OR 2 mrks: 7,5 cm with partial, logical argument OR 1 mrk: 7,5 cm with no argument given OR volumes correctly calculated, but no conclusion about largest volume.	M		A	
	5	35 × 35 × 5	6 125						
	6	33 × 33 × 6	6 534						
	7	31 × 31 × 7	6 727						
	8	29 × 29 × 8	6 728						
	9	27 × 27 × 9	6 561						
	10	25 × 25 × 10	6 250						
	7,5	30 × 30 × 7,5	6 750						
	8,5	28 × 28 × 8,5	6 664						
	7,4	30,2 × 302 × 7,4	6 449,096						
	7,6	29,8 × 29,8 × 7,6	6 749,104						
	The square with the 7,5 cm cut has the largest volume.								

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
4.	<p>The length of the square cut from the square cardboard that gives the largest volume is 1-sixth of the length of the cardboard. For example, $18 \div 6 = 3$; $24 \div 6 = 4$ and $45 \div 6 = 7,5$. (Or $\frac{1}{6}$ of 18 = 3; $\frac{1}{6}$ of 24 = 4 and $\frac{1}{6}$ of 45 = $7\frac{1}{2}$)</p> <p>Or</p> <p>The length of the cardboard is 6 times the length of the square cut from the square cardboard that gives the largest volume. For example, $3 \times 6 = 18$, $4 \times 6 = 24$ and $7,5 \times 6 = 45$</p>	<p>1 mrk: valid observation</p> <p>1 mrk: valid explanation</p>	NOR & M		R	(2)
5.	10 cm because $\frac{1}{6}$ of 60 = 10	<p>1 mrk: correct</p> <p>1 mrk: valid explanation</p>	NOR & M		R	(2)

To prepare for this assessment, learners should revise from NumberSense Workbook 17, pages 1 – 29; pages 38 – 48 (Space & Shape) and pages 49 – 53 (Time).

Assessment framework:

Assessment framework:		Cognitive domain						
		Knowing (K)		Applying (A)		Reasoning (R)		TOTAL
Content area	Number, operations and relationships (NOR)	1(1), 2(1), 3(2), 4b(1), 4d(1), 4e(1), 4f(1), 5a(1)	9	4a(1), 4c(1), 5b(1), 6(2), 7a(1), 7c(2)	8	7b(1), 8(2)	3	20
	Patterns, functions & algebra (PFA)	9a(1)	1	9b(2)	2			3
	Space & shape (SS)	10a(1), 11a(1)	2	10b(1), 11b(1), 11c(1)	3	12(1), 13(1)	2	7
	Measurement (M)	14(1)	1	15(2)	2	16(2)	2	5
	Data handling (DH)							
	TOTAL	13		15		7		35

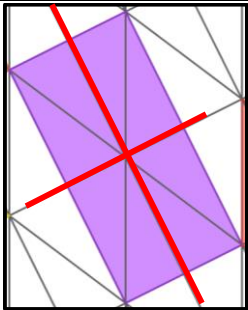
Memo:

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.	45 ; 90 ; 135	1 mrk: correct	NOR	17.16, 17.30	K	(1)
2.	0,4	1 mrk: correct	NOR	17.13, 17.15	K	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
3.a.	280	1 mrk: all correct	NOR	17.1	A	(1)
3.b.	485	1 mrk: correct	NOR		A	(1)
4.a.	450	1 mrk: correct	NOR	17.20	A	(1)
4.b.	9,2	1 mrk: correct	NOR	17.2, 17.8, 17.13	K	(1)
4.c.	22,97	1 mrk: correct	NOR	17.14	A	(1)
4.d.	42	1 mrk: correct	NOR	17.28, 17.31, 17.36	K	(1)
4.e.	$4\frac{7}{8}$	1 mrk: correct	NOR	17.22	K	(1)
4.f.	8	1 mrk: correct	NOR	17.10, 17.19, 17.22	K	(1)
5.a.	$\frac{1}{3}$ or 1 third	1 mrk: correct	NOR	17.12	K	(1)
5.b.	$\frac{1}{6}$ or 1 sixth	1 mrk: correct	NOR		A	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation														
6.	$12\frac{2}{4}$ or $12\frac{1}{2}$ or 12 and 2 quarters or 12 and 1 half <i>Possible working:</i> <ul style="list-style-type: none"> 10 + 10-quarters = 10 + 2 and 2-quarters Use a table: <table border="1"> <tr> <td>Tarts</td><td>1</td><td>2</td><td>3</td><td>4</td><td>8</td><td>10</td></tr> <tr> <td>Cups</td><td>$1\frac{1}{4}$</td><td>$2\frac{2}{4}$</td><td>$3\frac{3}{4}$</td><td>5</td><td>10</td><td>$12\frac{2}{4}$</td></tr> </table>	Tarts	1	2	3	4	8	10	Cups	$1\frac{1}{4}$	$2\frac{2}{4}$	$3\frac{3}{4}$	5	10	$12\frac{2}{4}$	1 mrk: correct 1 mrk: valid working	NOR	17.31	A	(2)
Tarts	1	2	3	4	8	10														
Cups	$1\frac{1}{4}$	$2\frac{2}{4}$	$3\frac{3}{4}$	5	10	$12\frac{2}{4}$														
7.a.	20	1 mrk: correct	NOR	17.3	A	(1)														
7.b.	400 millilitres or 0,4 litres or $\frac{2}{5}$ litre	1 mrk: correct <i>Accept equivalent fractions</i>	NOR		R	(1)														
7.c.	6 (blue) and 15 (yellow) <i>Possible working:</i> <ul style="list-style-type: none"> $2 + 5 \rightarrow 7 + 2 + 5 \rightarrow 14 + 2 + 5 \rightarrow 21$. $2 + 2 + 2 = 6$ and $5 + 5 + 5 = 15$ $2 + 5 = 7$, $21 \div 7 = 3$, $2 \times 3 = 6$ and $21 - 6 = 15$ 	1 mrk: 6 and 15 correct 1 mrk: valid working	NOR	17.12	A	(2)														

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation												
8.	50 <i>Possible working:</i> <ul style="list-style-type: none">From $\frac{1}{8}$ to $\frac{5}{8}$ is $\frac{4}{8}$ or half a tank. $25 \times 2 = 50$	1 mrk: correct 1 mrk: valid working	NOR		R	(2)												
9.a.	<table><tr><td>Picture number</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Number of matches</td><td>12</td><td>20</td><td>28</td><td>36</td><td>44</td></tr></table>	Picture number	1	2	3	4	5	Number of matches	12	20	28	36	44	1 mrk: correct	PFA	17.4, 17.5	K	(1)
Picture number	1	2	3	4	5													
Number of matches	12	20	28	36	44													
9.b.	<p>1 2 3 20</p> <p>$\times 8$</p> <p>$+ 4$</p> <p>12 20 28 164</p>	1 mrk: $\times 8$ and $+ 4$ <i>order must be correct</i> 1 mrk: 164	PFA		A	(2)												
10.a.		1 mrk: correct	SS	17.38, 17.39, 17.40, 17.41	K	(1)												
10.b.		1 mrk: correct	SS		A	(1)												
11.a.	A, C and E	1 mrk: all correct and no extra	SS	17.46, 17.47	K	(1)												

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
11.b.	Thato is correct because he has used the same triangle to complete the tessellation. One pair of opposite sides of the quad is the longest side of the triangle and the other pair of opposite sides of the quadrilateral is twice the shortest side of the triangle.	1 mrk: valid justification	SS		A	(1)
11.c		1 mrk: correct <i>2 lines only. The diagonals are not lines of symmetry</i>	SS	17.48	A	(1)
12.	B	1 mrk: correct	SS	17.39, 17.40, 17.41	R	(1)
13.	D	1 mrk: correct	SS		R	(1)
14.	19:25	1 mrk: correct	M		K	(1)
15.	3 minutes and 17 seconds <i>Possible working:</i> <ul style="list-style-type: none"> 12: 15 + 45 seconds → 13: 00 + 2 minutes 32 seconds → 15: 32 $2\text{ m } 32\text{ s} + 45\text{ s} = 2\text{ m } 32\text{ s} + 28\text{ s} + 17\text{ s}$ $= 3\text{ min } 17\text{ sec}$	1 mrk: correct 1 mrk: valid working	M	17.51, 17.52	A	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
16.	14 minutes <i>Possible working:</i> <ul style="list-style-type: none"> In one day, watch loses time $24 \text{ hrs} \div 6 \text{ hrs} = 4$ times $30 \text{ sec} \times 4 = 2 \text{ min/day}$ $2 \text{ min/day} \times 7 \text{ days} = 14 \text{ minutes}$ 	1 mrk: correct 1 mrk: valid working	M		R	(2)

To prepare for this assessment, learners should revise from NumberSense Workbook 17, pages 30 – 37 and Workbook 18 pages 1 – 28 and 40 – 45 (3D Space & Shape) and pages 49 – 53 (Time).

Assessment framework:

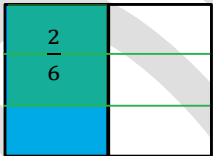
		Cognitive domain						
		Knowing (K)		Applying (A)		Reasoning (R)		TOTAL
Content area	Number, operations and relationships (NOR)	1(1), 2(2), 3(1), 4a(1), 4b(1), 4c(1), 4d(1), 4e(1), 4g(1)	10	4f(1), 4h(1), 4i(1), 5(2), 6(2), 7(2), 8(1)	10	9(1), 10(2), 11(2)	5	25
	Patterns, functions & algebra (PFA)	12(2)	2	13(1)	1	14(2)	2	5
	Space & shape (SS)	15(2)	2	16(2)	2	17(1)	1	5
	Measurement (M)							
	Data handling (DH)							
	TOTAL	14		13		8		35

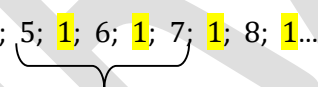
Memo:

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.	13,1	1 mrk: correct	NOR	17.24; 18.36	K	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
2.a.	16 and 24	1 mrk: correct (and no extra selected)	NOR	17.16; 17.30; 18.1	K	(1)
2.b.	2, 3; 5 and 19	1 mrk: all correct	NOR	16.23; 18.38	K	(1)
3.	8000	1 mrk: correct	NOR	18.27	K	(1)
4.a.	1100	1 mrk: all correct	NOR	18.21	K	(1)
4.b.	2,4	1 mrk: correct	NOR	17.8; 17.14; 17.17; 18.6	K	(1)
4.c.	$2\frac{6}{8}$ or $2\frac{3}{4}$	1 mrk: correct	NOR	17.22; 18.16	K	(1)
4.d.	3800	1 mrk: correct	NOR	18.2	K	(1)
4.e.	2000	1 mrk: correct	NOR	18.5; 18.11, 18.27; 18.30	K	(1)
4.f.	7,55	1 mrk: correct	NOR	18.7; 18.9	A	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
4.g.	30	1 mrk: correct	NOR	17.28; 18.1	K	(1)
4.h.	67	1 mrk: correct	NOR	18.4; 18.14	A	(1)
4.i.	1,1	1 mrk: correct <i>Also accept $1\frac{1}{10}$</i>	NOR	18.14	A	(1)
5.	376 <i>Possible thinking:</i> <ul style="list-style-type: none"> • Double 47 = 94; double 94 = 188 and double 188 = 376 • $47 = 50 - 3$. $50 \times 8 = 400$ and $3 \times 8 = 24$. $400 - 24 = 376$ • $47 = 40 + 7$. $40 \times 8 = 320$ and $7 \times 8 = 56$. $320 + 56 = 376$ 	1 mrk: correct 1 mrk: valid thinking	NOR	18.3; 18.11; 18.28	A	(2)
6.	8 <i>Possible thinking:</i> <ul style="list-style-type: none"> • $75 + 75 \rightarrow 150 + 75 \rightarrow 225 + 75 \rightarrow 200 + 75 \rightarrow 275 + 75 \rightarrow 350 + 75 \rightarrow 425 + 75 \rightarrow 500$ 	1 mrk: correct 1 mrk: valid thinking	NOR	18.5; 18.17; 18.23	A	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
7.	12 <i>Possible thinking:</i> <ul style="list-style-type: none"> 4-fifths $\times 15 = 60$-fifths. Since there are 5-fifths in 1 metres, $60 \div 5 = 12$ $\frac{4}{5} + \frac{4}{5} \rightarrow 1\frac{3}{5} + \frac{4}{5} \rightarrow 2\frac{2}{5} + \frac{4}{5} \rightarrow 3\frac{1}{5} + \frac{4}{5} \rightarrow 4$. 5 bags uses 4 m, $5 \times 3 = 15$, so $4 \times 3 = 12$ 	1 mrk: correct 1 mrk: valid thinking	NOR	18.16; 18.22	A	(2)
8.	$\frac{2}{3}$	1 mrk: correct	NOR	17.27; 18.29	A	(1)
9.	Pete	1 mrk: correct	NOR	18.6; 18.36	R	(1)
10.	24 <i>Possible thinking:</i> <ul style="list-style-type: none"> Using a picture:  $\frac{2}{6}$ of 72 = $2 \times 12 = 24$ $\frac{2}{3}$ of $\frac{1}{2} = \frac{2}{6}$ or $\frac{1}{3}$; $\frac{1}{3}$ of 72 = 24 $\frac{1}{2}$ of 72 = 36, $\frac{2}{3}$ of 36 = $12 \times 2 = 24$ 	1 mrk: correct 1 mrk: valid thinking	NOR	18.4	R	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation												
11.	35 <i>Possible thinking:</i> <ul style="list-style-type: none">5 rows with 7 learners in each row. $5 \times 7 = 35$.	1 mrk: correct 1 mrk: valid thinking	NOR		R	(2)												
12.	<table><tr><td>Input</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>Output</td><td>6</td><td>11</td><td>16</td><td>21</td><td>26</td></tr></table>	Input	1	2	3	4	5	Output	6	11	16	21	26	2 mrks: all 5 correct OR 1 mrk: 3-4 correct	PFA	18.24	K	(2)
Input	1	2	3	4	5													
Output	6	11	16	21	26													
13.	35	1 mrk: correct	PFA	18.3	A	(1)												
14.	18 <i>Possible thinking:</i> <ul style="list-style-type: none">Pattern is: 1; 1; 1; 2; 1; 3; 1; 4; 1; 5; 1; 6; 1; 7; 1; 8; 1... <div><p>Hidden except for 2 beads of last 7</p>$5 + 1 + 6 + 1 + 7 - 2 = 18$</div>	1 mrk: correct 1 mrk: valid thinking	PFA		R	(2)												
15.a.	Hexagonal-based prism	1 mrk: correct	SS	18.40; 18.41; 18.42	K	(1)												
15.b.	12	1 mrk: correct	SS		K	(1)												

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
16.	30 <i>Possible thinking</i> <ul style="list-style-type: none"> 20 triangles \times 3 edges each = 60 edges, but two edges are joined to make polyhedron. $60 \div 2 = 30$ $20 \times 3 \div 2 = 30$ 	1 mrk: correct 1 mrk: valid thinking	SS	18.44; 18.5	A	(2)
17.	24	1 mrk: correct	SS		R	(1)

To prepare for this assessment, learners should revise from NumberSense Workbooks 17 and 18 pages.

Assessment framework:		Cognitive domain						
		Knowing (K)		Applying (A)		Reasoning (R)		TOTAL
Content area	Number, operations and relationships (NOR)	1(1), 2(1), 3(2), 4(2), 5a(1), 5b(1), 5c(1), 5e(1)	10	5d(1), 5f(1), 6(6), 7(2)	10	8(2), 9(2)	4	24
	Patterns, functions & algebra (PFA)	10(2)	2	11(2)	2	12(2)	2	6
	Space & shape (SS)	13a(1), 13b(1), 14a(1)	3	13c(2), 14b(1)	3	15(3)	3	9
	Measurement (M)	16(1), 18(2)	3	17(2), 19(2)	4		-	7
	Data handling (DH)	20a(1), 20b(1)	2	21(1)	1	20(c)	1	4
	TOTAL	20		20		10		

Memo:

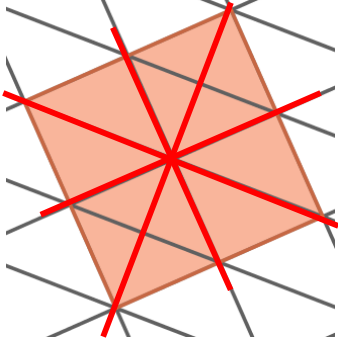
Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
1.	10,9	1 mrk: correct	NOR	17.24; 18.36	K	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
2.	15 and 60	1 mrk: correct (and no extra selected)	NOR	17.16; 17.30; 18.1; 18.38	K	(1)
3.a.	700	1 mrk: all correct	NOR	17.1; 18.27	K	(1)
3.b.	70	1 mrk: correct	NOR		K	(1)
4.a.	$5\frac{7}{10}$	1 mrk: all correct	NOR	17.13; 17.15; 17.33; 18.13	K	(1)
4.b.	8,2	1 mrk: correct	NOR		K	(1)
5.a.	213	1 mrk: correct <i>Mentally as 163 + 50</i>	NOR	17.11	K	(1)
5.b.	7 fifths or $\frac{7}{5}$ or 1 and 2-fifths or $1\frac{2}{5}$	1 mrk: correct	NOR	17.22; 18.10; 18.16	K	(1)
5c.	6000	1 mrk: correct	NOR	18.5; 18.11	K	(1)
5.d.	6,5	1 mrk: correct <i>Mentally as 12 – 5,5</i>	NOR	18.31; 18.37	A	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
5.e.	40	1 mrk: correct	NOR	17.28; 17.36; 18.1	K	(1)
5.f	2,7 Also accept $2\frac{7}{10}$	1 mrk: correct	NOR	18.14	A	(1)
6.a.	14,60 <i>Possible thinking:</i> <ul style="list-style-type: none"> $R3,75 + R6,25 \rightarrow R10 + R4,60 \rightarrow R14,60$ 	1 mrk: correct 1 mrk: valid thinking	NOR	17.23; 17.32	A	(2)
6.b.	441 <i>Possible thinking:</i> <ul style="list-style-type: none"> $63 = 60 + 3$. $60 \times 7 = 420$ and $3 \times 7 = 21$. $420 + 21 = 441$ 	1 mrk: correct 1 mrk: valid thinking	NOR	18.3; 18.11; 18.28	A	(2)
6.c.	250 <i>Possible thinking:</i> <ul style="list-style-type: none"> $400 \div 8 \rightarrow 50 \times 5 \rightarrow 250$ $\frac{1}{8}$ of 400 = 50, $\frac{5}{8}$ of 400 = $50 \times 5 = 250$ 	1 mrk: correct 1 mrk: valid thinking	NOR	17.19; 17.22; 17.24	A	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
7.	<p>22</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> $2\frac{1}{4} + 2\frac{1}{4} \rightarrow 4\frac{1}{2} + 2\frac{1}{4} \rightarrow 6\frac{3}{4} + 2\frac{1}{4} \rightarrow 9$. He can make 4 bicycles with 9 metres of wire. $9 \times 5 = 45$ (20 bicycles) $45 + 2\frac{1}{4} \rightarrow 47\frac{1}{4} + 2\frac{1}{4} \rightarrow 49\frac{1}{2}$. So $20 + 2 = 22$ bicycles <i>Guess and check:</i> $10 \times 2 + 10 \times \frac{1}{4} = 20 + 2\frac{1}{2} = 22\frac{1}{2}$. So, $20 \times 2\frac{1}{4} = 45$. $45 + 2\frac{1}{4} \rightarrow 47\frac{1}{4} + 2\frac{1}{4} \rightarrow 49\frac{1}{2}$. So, $20 + 2 = 22$ bicycles 	<p>1 mrk: correct</p> <p>1 mrk: valid thinking</p>	NOR	18.10; 18.16; 18.22	A	(2)
8.	<p>30</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> If $\frac{2}{5}$ of learners = 12 girls, then $\frac{1}{5}$ of learners = 6 girls. $6 \times 5 = 30$ 	<p>1 mrk: correct</p> <p>1 mrk: valid thinking</p>	NOR		R	(2)
9.	<p>60</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> Piet and Sindi have $220 - 40 = 180$ stamps. Because Piet has double Sindi's amount put them in 3 groups. $180 \div 3 = 60$ $220 - 40 \rightarrow 180 \div 3 \rightarrow 60$ 	<p>1 mrk: correct</p> <p>1 mrk: valid thinking</p>	NOR		R	(2)

Ques	Correct solution(s)					Comment	Content area	Page ref.	Cognitive domain	Mark allocation
10.	Input	1	2	3	5	2 mrks: all 4 correct or 1 mrk: 3 correct	PFA	17.4; 17.5; 18.8; 18.24	K	(2)
	Output	8	13	18	28					
11.	<i>Input</i> $\rightarrow \times 4 \rightarrow + 6 \rightarrow$ <i>Output</i>					1 mrk: $\times 4$ 1 mrk: $+ 6$ <i>Order must be correct</i>	PFA	18.8; 18.24	A	(2)
12.	2550 <i>Possible thinking:</i> <ul style="list-style-type: none"> $50 \times 51 = \text{Half } 5100 = 2550$ $20 + 10 \rightarrow 30 + 12 \rightarrow 42 + 14 \rightarrow 56 + 16 \rightarrow \dots \rightarrow 2352 + 98 \rightarrow 2450 + 100 \rightarrow 2550$ 					1 mrk: correct 1 mrk: valid thinking <i>Note the second method shown here is inefficient and should not be encouraged, but is valid if learners do not make any errors.</i>	PFA	18.3	R	(2)
13.a.	Translated it					1 mrk: correct	SS	17.39; 17.40; 17.41	K	(1)
13.b.	Reflected it					1 mrk: correct	SS		K	(1)
13.c.	Eddie turned the shape by a half turn each time and Pumla only turned the shape by a quarter (or fourth) turn each time.					1 mrk: Recognition of amount of turn 1 mrk: reference to half and quarter	SS		A	(2)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
14.a.	B, C and D	1 mrk: all correct and no extra	SS	18.49	K	(1)
14.b.		1 mrk: correct	SS	18.49	A	(1)
15.	30 <i>Possible thinking:</i> <ul style="list-style-type: none"> 12 <i>decagons</i> \times 10 <i>edges</i> + 20 <i>hexagons</i> \times 6 <i>edges</i> = $120 + 120 = 240$ <i>edges</i> $180 \times 2 = 360$ <i>loose edges</i> $360 - 240 = 120$ <i>and</i> $120 \div 4$ <i>edges of square</i> = 30 	1 mrk: calculating no. of edges in all decagons and hexagons 1 mrk: calculating no. of edges for squares 1 mrk: correct	SS	18.45	R	(3)
16.	5 minutes to 7 pm and 6:55 pm	1 mrk: both correct and no extra	M	17.49	K	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
17.	13:11 or 1:11 pm <i>Possible thinking:</i> <ul style="list-style-type: none"> 09:57 + 3 min → 10:00 + 28 min → 10:28. 3 + 28 = 31 minute duration. 12:40 + 20 min → 13:00 + 11 min = 13:11 	1 mrk: correct 1 mrk: valid thinking	M	17.52; 17.53	A	(2)
18.a.	3000	1 mrk: correct	M	18.62	K	(1)
18.b.	1,25 or $1\frac{25}{100}$ or $1\frac{1}{4}$	1 mrk: correct	M	18.53	K	(1)
19.	40 kg and 275 g or 40,275 kg <i>Possible thinking:</i> <ul style="list-style-type: none"> 41000 – 725 = 40275g = 40,275kg 41kg = 40kg + 1kg. 1kg – 725g = 1000 – 725 = 275g. 40kg + 275g 	1 mrk: correct 1 mrk: valid thinking <i>Accept as correct if learners have rounded off to 40,3 kg</i>	M	118.61; 8.62	A	(2)
20.a.	January	1 mrk: correct	DH	17.57, 17.58, 17.59	K	(1)
20.b.	2	1 mrk: correct	DH		K	(1)
20.c.	More than 27 , but less than 33 ice creams	1 mrk: correct	DH	17.1, 17.57, 17.58, 17.59	R	(1)

Ques	Correct solution(s)	Comment	Content area	Page ref.	Cognitive domain	Mark allocation
21.	17	1 mrk: correct	DH	17.55, 17.56	A	(1)

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