

# NumberSense Assessment Portfolio – Grade 5

## Part B Contents

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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. Calculate. Show your thinking.

a.  $87\,000 - 48\,542$

(2)

b.  $468 \div 6$

(2)

2. Adila is given a puzzle:  $BA = A \times A \times A$ .

Each letter stands for a unique digit. Determine the value of B.  
Show your thinking.

B = \_\_\_\_\_ (2)

3. There are 36 Smarties in a box.

a. How many Smarties are there in  $\frac{1}{3}$  of the box?

\_\_\_\_\_ Smarties (1)

b. How many Smarties are there in  $\frac{1}{4}$  of the box?

\_\_\_\_\_ Smarties (1)

c. How many Smarties are there in  $\frac{1}{3} + \frac{1}{4}$  of the box?

\_\_\_\_\_ Smarties (1)

d. Write your answer to c. as a fraction of the box of Smarties in at least two ways.

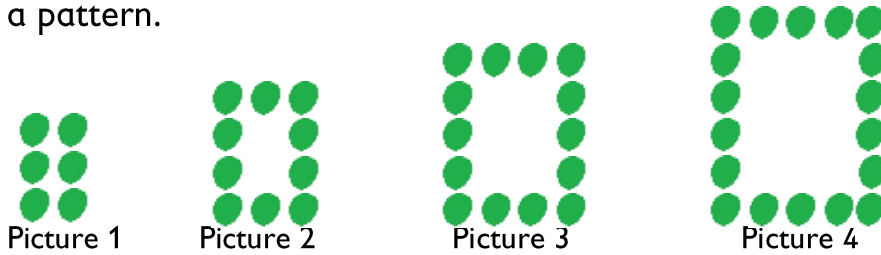
(2)

4. Mrs Twala Cuts 1-tenth of fabric from a new roll of fabric.

99 metres of fabric remains on the roll. Determine the total length of the original new roll of fabric. Show your thinking.

\_\_\_\_\_ m (2)

5. Vusi makes pictures with dots like this. The first four pictures make a pattern.

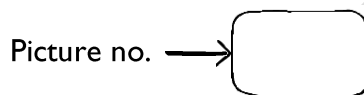


- a. Complete the table.

|                |   |    |   |   |   |
|----------------|---|----|---|---|---|
| Picture number | 1 | 2  | 3 | 4 | 5 |
| No. of dots    |   | 10 |   |   |   |

(2)

- b. Complete the flow diagram to show how you can calculate the number of dots if you know the picture number.



(2)

- c. Use the flow diagram to calculate the number of dots in picture 50. Show your thinking.

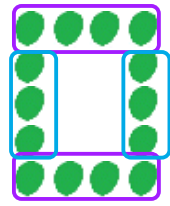
\_\_\_\_\_ dots (2)

d.



*I think of a top row and a bottom row and two sides when I calculate the number of dots in a picture.*

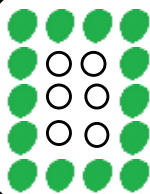
*Picture 3 will have:  $4 + 4 + 3 + 3$  dots.*



How would Dan calculate the number of dots in picture 50?  
Show Dan's thinking. Does Dan's answer agree with your answer in question c.?

(2)

e.



*I fill up the rectangle when I calculate the number of dots in a picture and then subtract the extra dots.*



How would Casey calculate the number of dots in picture 50?  
Show Casey's thinking.

(1)

- f. Use picture 3 to explain one other way that you can calculate the number of dots in each picture. Show how you would use this way to calculate the number of dots in picture 3 and in picture 50.



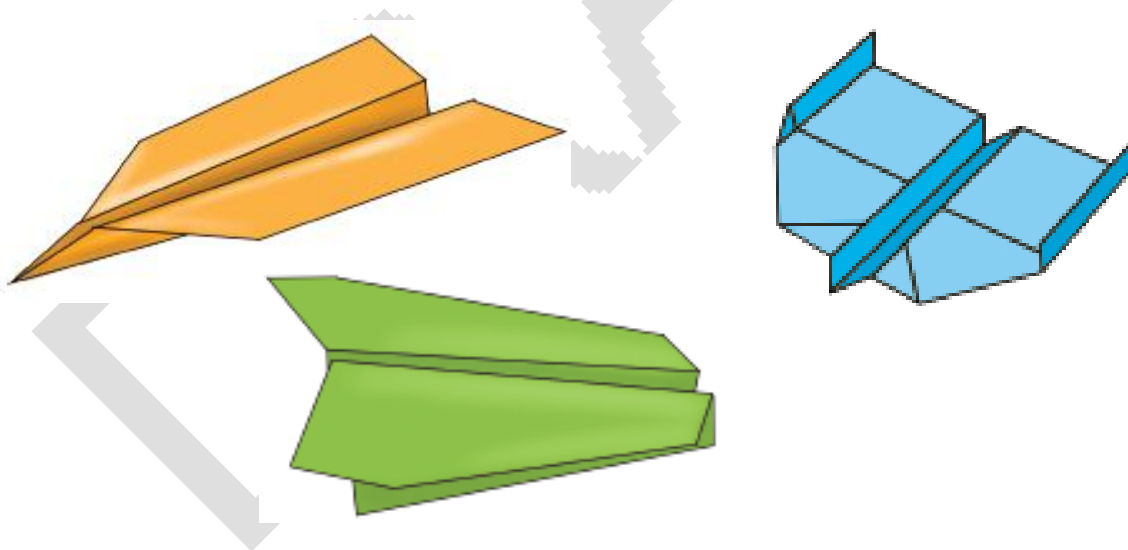
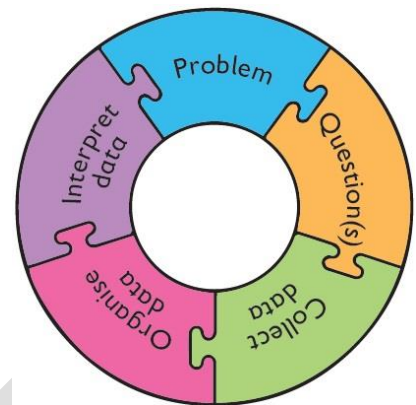
(3)

**Project: Which aeroplane flies furthest?**

(NumberSense Workbook 19, pages 53 – 61)

Project description

- Your teacher will assign you to a group to complete this project.
- Working as a group you will complete the research activity described on pages 53 to 61.
- Your teacher will tell you whether you will complete the task in your workbooks or develop a poster as a group and submit that for marking. You must also hand in your aeroplanes on completion of the task.
- Your group will also make a presentation about your work. Each member of the group must contribute to the presentation.
- This project is for 25 marks and will be marked using the rubric provided.
- This project is due on \_\_\_\_\_



Names of group members: \_\_\_\_\_

|                                       |  |   |   |     |
|---------------------------------------|--|---|---|-----|
| Research question (pg. 53)            | 3<br>At least two other research questions are clearly stated with relevant criteria of what it means to be <i>best</i> .                        | 2<br>One other research question is clearly stated with relevant criteria of what it means to be <i>best</i> .                                      | 1 0<br>The research question are neither well stated nor relevant to what it means to be <i>best</i> .                                    | [3] |
| Aeroplane construction (pgs. 54 – 56) | 3<br>Instructions were clearly followed to build three structurally sound aeroplanes.  | 2<br>Most instructions were followed and aeroplanes are mostly structurally sound.  | 1 0<br>Aeroplanes constructed, but not necessarily according to instructions. Some structural errors.                                     | [3] |
| Data collection (pg. 57)              | 4<br>Each of the three aeroplanes has been flown 10 times by each of the four group members and the distance flown recorded in the tables        | 3 2<br>Each of the three aeroplanes has been flown at least 9 times by 3 or more of the group members and the distance flown recorded in the table. | 1 0<br>At least two aeroplanes were flown at least 8 times by 3 or more of the group members and the distance flown recorded in the table | [4] |
| Data organisation 1 (pg. 58)          | 5 4<br>Range of distances has correctly been used to calculate appropriate distance intervals and tallies accurately reflect the data collected. | 3 2<br>Range of distances has correctly been used to calculate appropriate distance intervals. Some inaccuracies in tallies.                        | 1 0<br>Minor errors in calculating distance intervals results in significant inaccuracies in tallies.                                     | [5] |
| Data organisation 2 (pg. 59)          | 4<br>Scale and labels on vertical axis appropriate and bars drawn accurately report data in tally table.   | 3 2<br>Scale and labels on vertical axis are mostly appropriate and bars drawn mostly report data in tally table accurately.                        | 1 0<br>Errors scale and/or labels on vertical axis results in errors in accuracy of bars drawn.   | [4] |



|                                 |   |   |   |      |
|---------------------------------|---|---|---|------|
| Data interpretation<br>(pg. 61) | 6 5<br>Interpretation shows evidence of a thoughtful analysis and explanation of the data presented in the graphs | 4 3 2<br>Interpretation shows some evidence of a thoughtful analysis but the link with what is presented in the graphs may lack some clarity. | 1 0<br>The interpretation is not supported by evidence in the data. | [6]  |
| TOTAL                           |   |   |   | [25] |

Teachers comments:

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.....

.....

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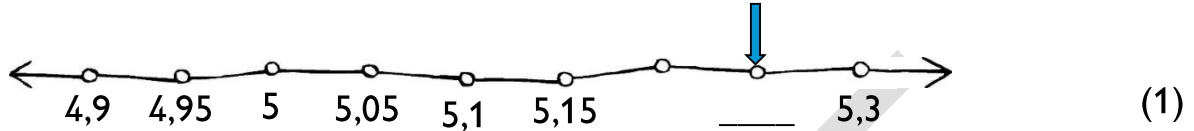
.....

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 factors of 46?

☐ 2      ☐ 3      ☐ 23      ☐ 46      ☐ 72

(1)

3. Write as decimal fractions.

a.  $\frac{3}{5} =$  \_\_\_\_\_

(1)

b.  $\frac{7}{100} =$  \_\_\_\_\_

(1)

4. Which number is larger? Select the correct one and explain your thinking.

a. ☐  $\frac{4}{5}$  or ☐  $\frac{4}{7}$  because:

(2)

b. ☐  $\frac{4}{5}$  or ☐  $\frac{5}{6}$  because:

(2)

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

a.  $8\,300 + 1\,500 =$  \_\_\_\_\_ (1)

b.  $3,04 +$  \_\_\_\_\_  $= 3,54$  (1)

c.  $1,5 + 2,6 =$  \_\_\_\_\_ (1)

d.  $27 - 8,3 =$  \_\_\_\_\_ (1)

e.  $0,15 \times 10 =$  \_\_\_\_\_ (1)

f.  $3 \times 0,6 =$  \_\_\_\_\_ (1)

g.  $8 \times 35 =$  \_\_\_\_\_ (1)

h.  $4 \times 3 \times 5 \times 7 =$  \_\_\_\_\_ (1)

6. Six children share 156 marbles equally. How many marbles will each child get? Show your thinking.

\_\_\_\_\_ marbles. (2)

7. 18 vienna sausages are shared equally by a number of children. Each child gets  $2\frac{1}{4}$  sausages. How many children are there? Show your thinking.

\_\_\_\_\_ children (2)

8. What fraction of this figure is shaded?

\_\_\_\_\_

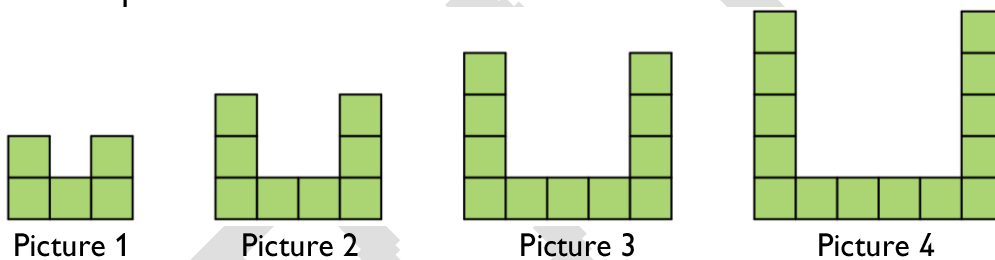


(1)

9. Sam is doing a calculation on his calculator. He then makes a mistake by multiplying by 10 instead of dividing by 10. The calculator answer is 600. What is the correct answer to Sam's calculation? \_\_\_\_\_ (1)

10. At a sale, a R600 jacket is selling for R500 and a R120 shirt is selling for R100. How much is a R300 pair of shoes? Show your thinking.  
R \_\_\_\_\_ (2)

11. Grace makes pictures with squares like this. The first four pictures make a pattern.

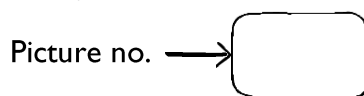


- a. Complete.

|                |   |   |    |   |   |    |
|----------------|---|---|----|---|---|----|
| Picture number | 1 | 2 | 3  | 4 | 5 | 10 |
| No. of squares | 5 | 8 | 11 |   |   |    |

(2)

- b. Complete the flow diagram to show how you can calculate the number of squares if you know the picture number.

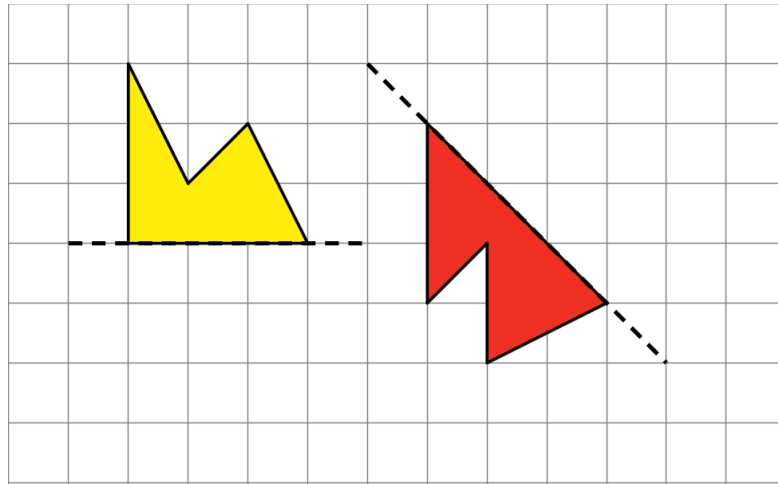


(2)

- c. Which picture number will have 83 squares?

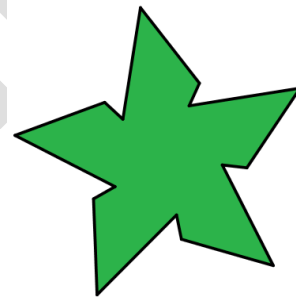
Picture \_\_\_\_\_ (1)

12. One half of two shapes is already drawn. The dotted line is the line of symmetry of each shape. Complete the shapes.



(2)

13. Tyron created this shape.



- a. Does Tyron's shape have any line symmetry? \_\_\_\_\_

If it does, draw in the line (or lines) of symmetry.

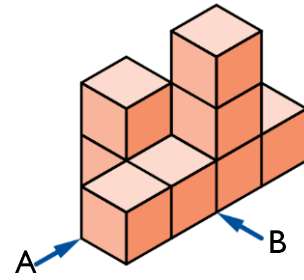
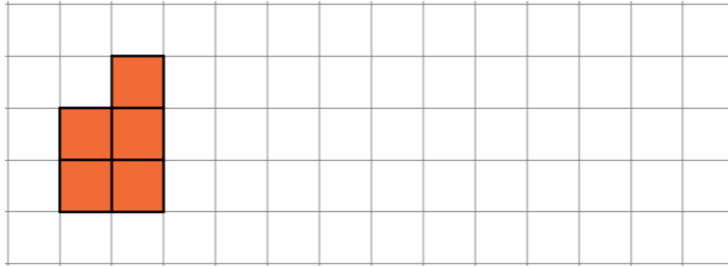
(1)

- b. Does Tyron's shape have rotational symmetry? \_\_\_\_\_

If it does, mark the centre of rotation with a dot and write down the order of symmetry.

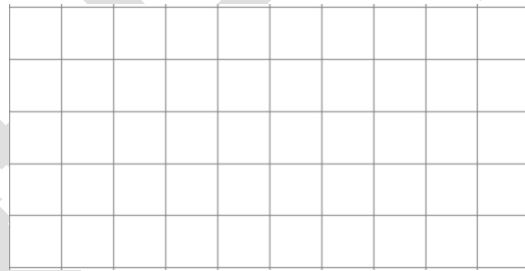
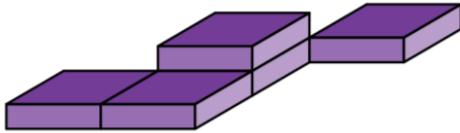
(2)

14. Luke uses 8 cubes to build this arrangement. The view from A is drawn on the grid. Draw the view from B on the grid.



(1)

15. What will you see if you look at this arrangement of 5 square tiles from directly above? Draw the view on the grid.



(1)

## PART A

Name: \_\_\_\_\_

Class: \_\_\_\_\_

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

1. Which numbers are:

a. multiples of 12? Select all.

☐ 3      ☐ 4      ☐ 12      ☐ 21      ☒ 120      (1)

b. factors of 45? Select all.

☐ 2      ☐ 3      ☐ 5      ☒ 9      ☐ 90      (1)

c. prime numbers? Select all.

☐ 2      ☐ 7      ☒ 9      ☐ 13      ☐ 21      (1)

2. Round:

a. 827 to the nearest 5. \_\_\_\_\_ (1)

b. 62 481 to the nearest 1 000. \_\_\_\_\_ (1)

3. Write the number with a common fraction in decimal fraction form.

a.  $5\frac{3}{4} =$  \_\_\_\_\_      b.  $10\frac{9}{25} =$  \_\_\_\_\_ (2)

4. Write the decimal fraction as a number with a common fraction.

6,37 = \_\_\_\_\_ (1)

5. Which number is larger? Select the correct one.

a.  $\square \frac{3}{8}$  or  $\square \frac{3}{9}$

b.  $\square \frac{7}{9}$  or  $\square \frac{9}{11}$  (2)

6. Complete. Fill in the answer only.

a.  $12\,250 + 750 =$  \_\_\_\_\_ (1)

b.  $18,7 + 3,4 =$  \_\_\_\_\_ (1)

c.  $3\frac{4}{5} + \frac{4}{5} =$  \_\_\_\_\_ (1)

d.  $4\,100 - 600 =$  \_\_\_\_\_ (1)

e.  $R20 - R3,65 = R$ \_\_\_\_\_ (1)

f.  $40 \times 70 =$  \_\_\_\_\_ (1)

g.  $12 \times 45 =$  \_\_\_\_\_ (1)

h.  $2 \times 1,35 =$  \_\_\_\_\_ (1)

i.  $208 \div 4 =$  \_\_\_\_\_ (1)

j.  $257 \div 100 =$  \_\_\_\_\_ (1)

k.  $\frac{5}{8}$  of R720 = R\_\_\_\_\_ (1)

l.  $\frac{1}{3}$  of  $\frac{1}{5} =$  \_\_\_\_\_ (1)

7. Calculate. Show your thinking.

a.  $6\,547 - 3\,265$

(2)



b.  $168 \times 4$

(2)

c.  $4\,842 \div 6$

(2)

8. Three friends are running in a relay. Frank ran  $\frac{1}{2}$  the race, Shaun ran  $\frac{1}{4}$  of the race and Jane ran  $\frac{1}{8}$  of the race. What fraction of the race still needs to be run? Show your thinking.

\_\_\_\_\_ of the race (2)

9. Mrs Adams buys a piece of fabric and give 3-tenths of the fabric to her sister. She uses  $\frac{1}{7}$  of the remaining fabric to make a cushion cover. How much of her original fabric will she still have? Show your thinking.

\_\_\_\_\_ m (2)

10. At a pizzeria, 2 small pizzas and one large pizza costs the same as 5 small pizzas. If a small pizza costs R11,50, what does a large pizza cost? Show your thinking.

R\_\_\_\_\_

11. Buli, Adila and Vusi worked in the garden. Buli worked for 3 hours, Adila worked 2 hours and Vusi worked 1 hour. They are paid R4 800 for their work altogether. How much should Buli get? Show your thinking.

R\_\_\_\_\_ (2)

12. In a string of beads there are 2 red beads for every 5 green beads and 3 purple beads for every 10 green beads. How many purple beads are there in a string with 12 red beads? Show your thinking.

\_\_\_\_\_ purple beads (2)

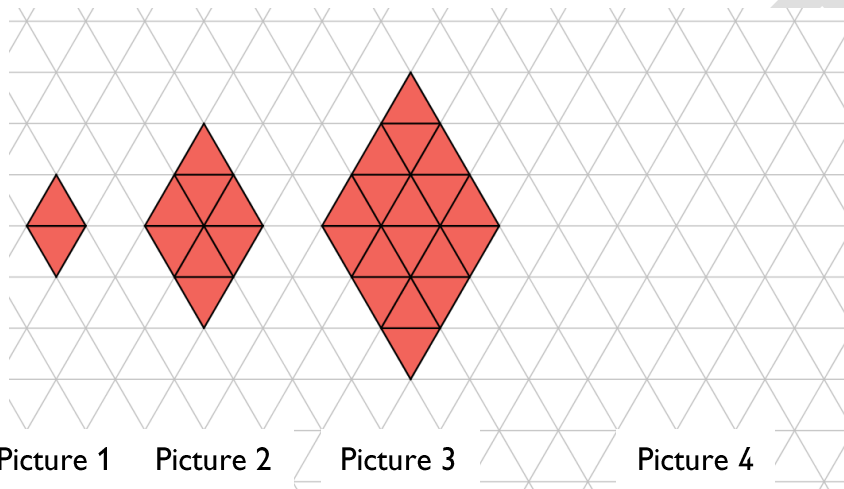
**PART B**

Name: \_\_\_\_\_

Class: \_\_\_\_\_

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

13. Pictures are made using triangles. The first four pictures make a pattern.



- a. Draw the fourth picture in the pattern. (1)
- b. Complete the table.

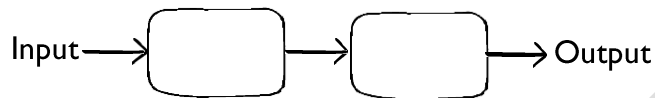
| Picture number   | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------|---|---|---|---|---|---|
| No. of triangles |   | 8 |   |   |   |   |

- c. How many triangles will there be in Picture 10? Show your thinking.

\_\_\_\_\_ triangles (2)

14. Use the table to complete the flow diagram.

|        |   |    |    |    |    |    |
|--------|---|----|----|----|----|----|
| Input  | 1 | 2  | 3  | 4  | 5  | 8  |
| Output | 5 | 11 | 17 | 23 | 29 | 47 |



(2)

15. Thembi and Rashid started a fitness programme, and decided to jog 3 street blocks further each day. On the first day they jogged 5 blocks. Today they jogged 44 blocks. For how many days have they been jogging? Show your thinking.

\_\_\_\_\_ days

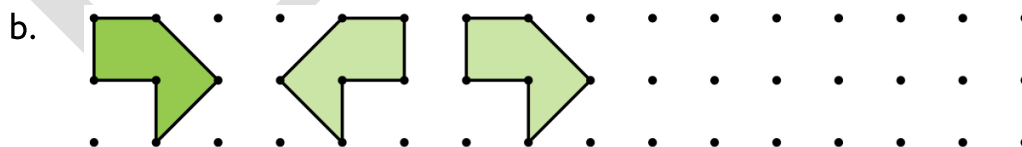
(2)

16. Extend each pattern and say what transformation you did to the shape to extend the pattern.



Transformation: \_\_\_\_\_

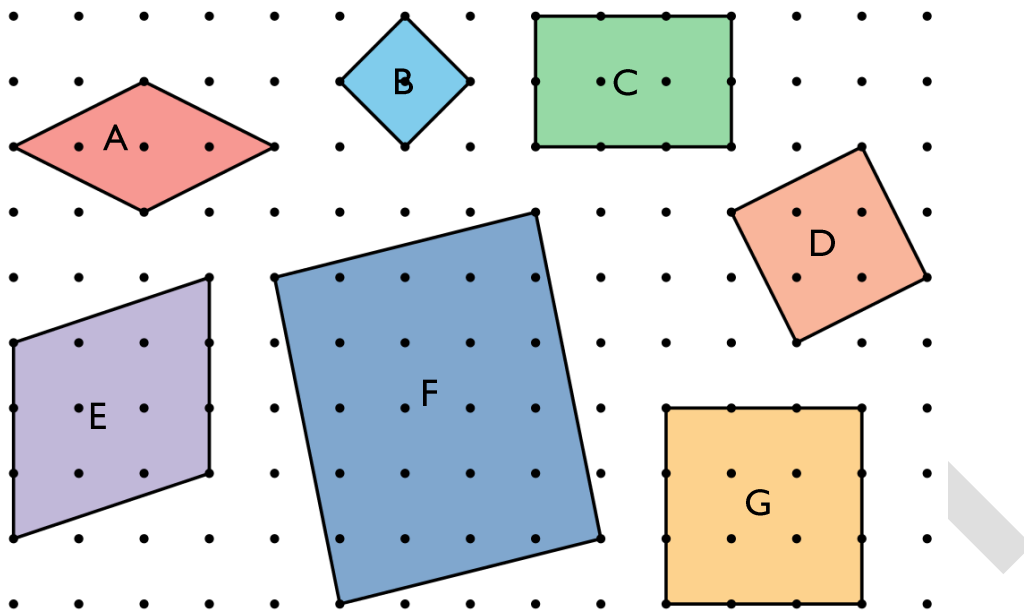
(2)



Transformation: \_\_\_\_\_

(2)

17. Which of the quadrilaterals are squares? Select all that apply.


☐ A

☐ B

☐ C

☐ D

☐ E

☐ F

☐ G

(1)

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



a. What is the name of this polyhedron?

\_\_\_\_\_

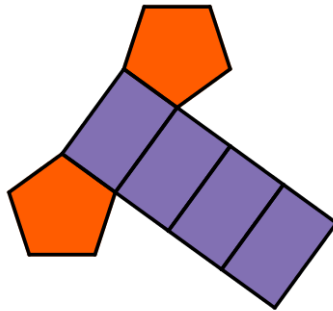
(1)

b. How many vertices does this polyhedron have?

\_\_\_\_\_ vertices

(1)

- c. The image below shows the incomplete net of this polyhedron. Draw in the missing face in ALL possible places that it could go.



(2)

19. What is the most likely temperature to set the oven in order to cook oven chips? Select one.

☐ 10 °C

☒ 100 °C

☐ 200 °C

☐ 2 000 °C

(1)

20. Arnold likes to go for a run at quarter to 6 in the evening.

- a. What is this time in analogue time? Select the correct one.

☐ 6:15 am

☒ 6:45 am

☐ 5:15 am

☐ 5:45 am

☐ 6:15 pm

☐ 6:45 pm

☒ 5:15 pm

☐ 5:45 pm

☐ None of these

(1)

- b. Write this time as 24-hour time.

\_\_\_\_\_

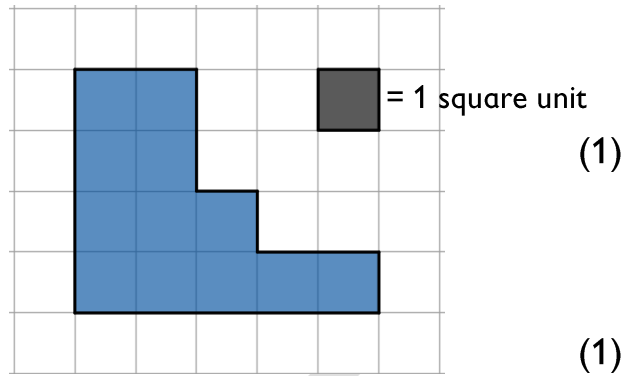
(1)

21. a. Determine the area of the shape.

\_\_\_\_\_ square units

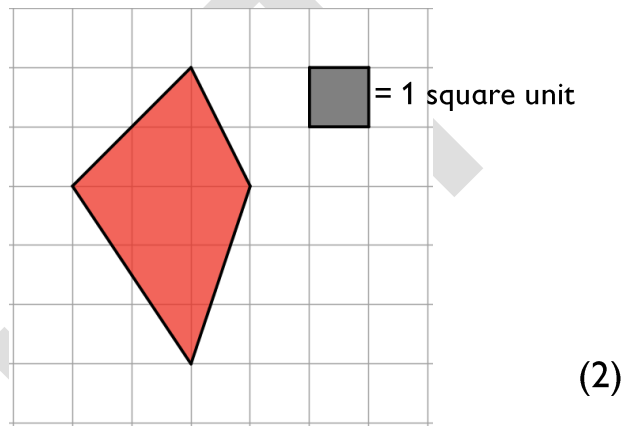
- b. Determine the perimeter of the shape.

\_\_\_\_\_ units



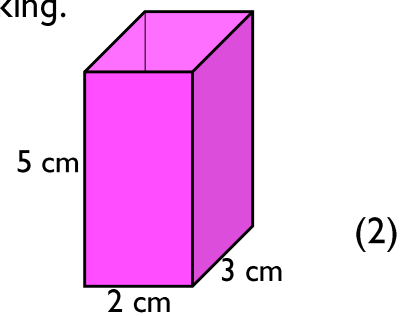
22. Determine the area of the shape. Show your thinking. You may do this by adding lines to the diagram.

\_\_\_\_\_ square units



23. Determine the volume of this box. Show your thinking.

\_\_\_\_\_ cm<sup>3</sup>



24. The points A, B, C, D, and E are located on a straight line, in that order.

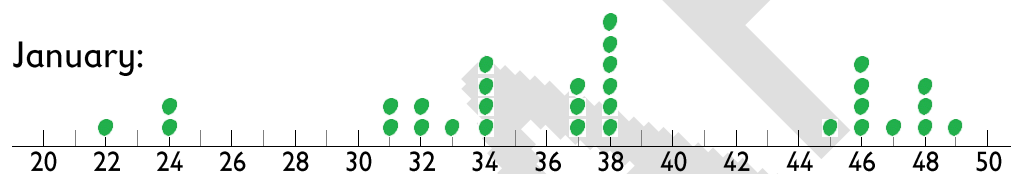
- The distance from A to E is 20 cm
- The distance from A to D is 15 cm
- The distance from B to E is 10 cm

What is the distance from B to D? Show your thinking.

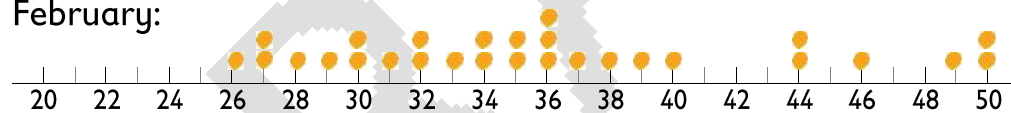
\_\_\_\_\_ cm (2)

25. Selwyn sold ice creams. He recorded the number of ice creams that he sold each day in January and February on dot plots.

January:



February:



a. What were the modal number of ice creams sold in January and February?

January: \_\_\_\_\_ ice creams      February: \_\_\_\_\_ ice creams (2)

b. Based on this data, Selwyn expects to sell 37 ice creams each day in March. Would you agree with Selwyn? Explain.

(2)

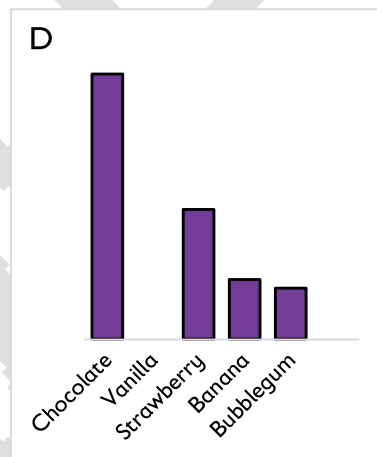
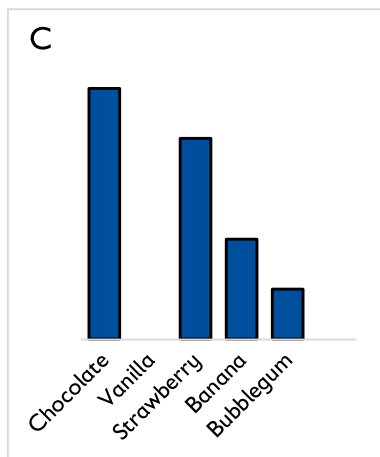
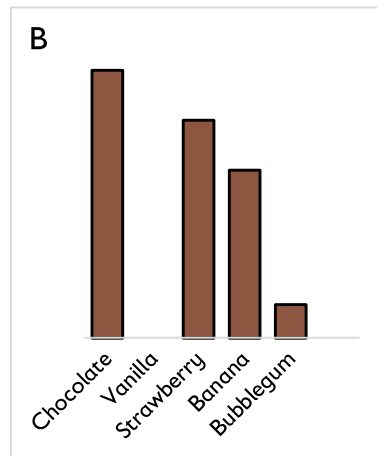
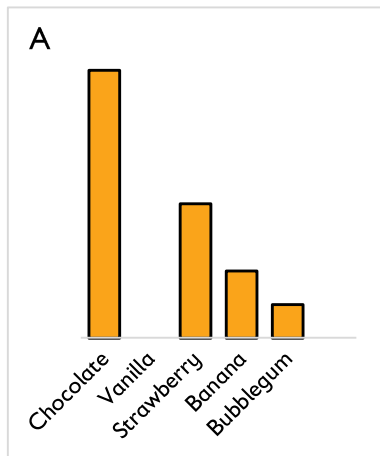


26. Selwyn kept a tally of the flavour of ice creams that he sold.

|            |  |
|------------|--|
| Chocolate  |  |
| Vanilla    |  |
| Strawberry |  |
| Banana     |  |
| Bubblegum  |  |

- a. How many bubblegum ice creams did Selwyn sell?  
\_\_\_\_\_ ice creams (1)
- b. What is the modal flavour of ice cream?  
(1)

- c. Which graph most accurately reflects the data that Selwyn collected? Tick the best one. *Note that all of the graphs have a bar missing for the number of vanilla ice creams sold.*



A



B



C



D

(1)

- d. On the graph that most accurately reflects Selwyn's data, draw in the missing bar for the number of vanilla ice creams sold.

(1)

To prepare for this assessment, learners should have completed NumberSense Workbook 20 , pages 1 – 39.

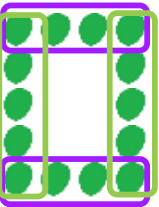
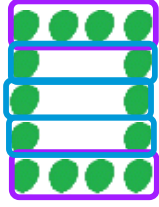
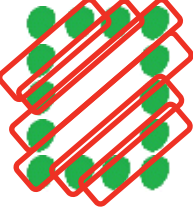
Memo:

| Ques | Correct solution(s)   | Comment  | Content area | Page ref.       | Cognitive domain | Mark allocation |
|------|---|--|--------------|-----------------|------------------|-----------------|
| 1.a. | <p>38458</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> <li><math>48542 + 58 \rightarrow 48600 + 400 \rightarrow 49000 + 1000 \rightarrow 50000 + 37000 \rightarrow 87000.</math><br/><math>58 + 400 + 1000 + 37000 = 38458</math></li> <li><math>87000 - 48000 \rightarrow 39000 - 500 \rightarrow 38500 - 42 \rightarrow 38458</math></li> </ul> | <p>1 mrk: correct</p> <p>1 mrk: valid thinking</p> | NOR          | 20.20           | A                | (2)             |
| 1.b. | <p>78</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> <li><math>468 = 420 + 48.</math> <math>420 \div 6 = 70</math> and <math>48 \div 6 = 8.</math> <math>70 + 8 = 78.</math></li> <li><math>468 - 300(50) \rightarrow 168 - 150(25) \rightarrow 18 - 18(3) \rightarrow 0.</math><br/><math>50 + 25 + 3 = 78</math></li> </ul>                      | <p>1 mrk: correct</p> <p>1 mrk: valid thinking</p> | NOR          | 20.25;<br>20.35 | A                | (2)             |

| Ques | Correct solution(s)  | Comment  | Content area | Page ref.                 | Cognitive domain | Mark allocation |
|------|--|--|--------------|---------------------------|------------------|-----------------|
| 2.   | 6<br><br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>By trial and error               <ul style="list-style-type: none"> <li><math>1 \times 1 \times 1 = 1</math> Too small and need a 2-digit answer;</li> <li><math>5 \times 5 \times 5 = 125</math> Too big</li> <li><math>3 \times 3 \times 3 = 27</math> 2-digit answer, but second digit is not equal to A</li> <li><math>4 \times 4 \times 4 = 64</math> This works</li> </ul> </li> </ul> | 1 mrk: correct<br><br>1 mrk: valid thinking                              | NOR          |                           | R                | (2)             |
| 3.a. | 12   | 1 mrk: correct   | NOR          | 20.4;                     | K                | (1)             |
| 3.b. | 9  | 1 mrk: correct   | NOR          | 20.12;<br>20.19           | K                | (1)             |
| 3.c. | 21   | 1 mrk: correct   | NOR          |                           | A                | (1)             |
| 3.d. | $\frac{21}{36}$ or $\frac{7}{12}$  | 1 mrk: each correct<br><br><i>Also accept other equivalent fractions</i> | NOR          | 20.19;<br>20.26;<br>20.29 | A                | (2)             |

| Ques        | Correct solution(s)   | Comment  | Content area | Page ref.                           | Cognitive domain | Mark allocation |   |             |   |    |    |    |    |                                      |     |                |   |     |
|-------------|---|--|--------------|-------------------------------------|------------------|-----------------|---|-------------|---|----|----|----|----|--------------------------------------|-----|----------------|---|-----|
| 4.          | 110<br><br><i>Possible thinking</i><br><br>• $99m = \frac{9}{10}$ of the roll, so $11m = \frac{1}{10}$ of the roll. 1 roll or $\frac{10}{10}$ of a roll = $10 \times 11m = 110m$          | 1 mrk: correct<br><br>1 mrk: valid thinking                                  | NOR          |                                     | R                | (2)             |   |             |   |    |    |    |    |                                      |     |                |   |     |
| 5.a         | <table border="1"><tr><td>Pic. no.</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>No. of dots</td><td>6</td><td>10</td><td>14</td><td>18</td><td>22</td></tr></table> | Pic. no.   | 1            | 2                                   | 3                | 4               | 5 | No. of dots | 6 | 10 | 14 | 18 | 22 | 1 mrk: 6, 14 and 18<br><br>1 mrk: 22 | PFA | 16.8;<br>16.32 | K | (2) |
| Pic. no.    | 1   | 2  | 3            | 4                                   | 5                |                 |   |             |   |    |    |    |    |                                      |     |                |   |     |
| No. of dots | 6   | 10   | 14           | 18                                  | 22               |                 |   |             |   |    |    |    |    |                                      |     |                |   |     |
| 5.b.        | <i>Picture no. <math>\rightarrow \times 4 \rightarrow +2 \rightarrow</math> No. of dots</i>   | 1 mrk: $\times 4$<br><br>1 mrk: $+ 2$<br><br><i>Must be in correct order</i> | PFA          | 20.10;<br>20.27;<br>20.29;<br>20.37 | A                | (2)             |   |             |   |    |    |    |    |                                      |     |                |   |     |
| 5.c.        | $50 \times 4 \rightarrow 200 + 2 \rightarrow 202$   | 1 mrk: awarded for substitution into flow diagram<br><br>1 mrk: 202          | PFA          | 20.10;<br>20.27                     | A                | (2)             |   |             |   |    |    |    |    |                                      |     |                |   |     |
| 5.d.        | $51 + 51 + 50 + 50$<br><br>Yes, Dan also calculates 202 dots  | 1 mrk: Dan's calculation<br><br>1 mrk: Dan also gets 202                     | PFA          | 20.37                               | A                | (2)             |   |             |   |    |    |    |    |                                      |     |                |   |     |

| Ques | Correct solution(s)           | Comment  | Content area | Page ref. | Cognitive domain | Mark allocation |
|------|-------------------------------|--|--------------|-----------|------------------|-----------------|
| 5.e. | $51 \times 52 - 49 \times 50$ | 1 mrk: Casey's calculation<br><br><i>Note that learners do not have to do this calculation</i> | PFA          | 20.37     | A                | (2)             |

| Ques | Correct solution(s)   | Comment   | Content area | Page ref.       | Cognitive domain | Mark allocation |
|------|---|---|--------------|-----------------|------------------|-----------------|
| 5.f. | <p>One possible solution:</p>  $P3 = 2 \times 4 + 2 \times 5 - 4$ $= 8 + 10 - 4$ $= 14$ $P50 = 2 \times 51 + 2 \times 52 - 4$ $= 102 + 104 - 4$ $= 202$ <p>Second possible solution:</p>  $P3 = 4 + (2 \times 3) + 4$ $= 4 + 6 + 4$ $= 14$ $P50 = 51 + (2 \times 50) + 51$ $= 51 + 100 + 51$ $= 202$ <p>Third possible solution:</p>  $P3 = 2 \times (2 \times 3) + 2$ $= 2 \times 6 + 2$ $= 14$ $P50 = 2 \times (2 \times 50) + 2$ $= 2 \times 100 + 2$ $= 202$ | <p>1 mrk: Method clearly shown on picture 3</p> <p>1 mrk: Calculation of no. of dots in P3 using method shown on picture</p> <p>1 mrk: Calculation of no. of dots in P50 using corresponding method</p> <p><i>Some possible solutions are shown, but there are more. Please feel free to send your or your learners different solutions to:</i></p> <p><a href="mailto:info@NumberSense.co.za">info@NumberSense.co.za</a></p> | PFA          | 20.36;<br>20.37 | R                | (3)             |

This project is in NumberSense Workbook 19, pages 53 to 61. Teachers should assign learners to a group of 4 learners.

It is recommended that teachers allow learners to do this project in two parts. In the first part, learners should collect and organise their data independently. This is well-guided in the workbooks and no new knowledge need be taught. Teachers should use “Interpret the data” on page 60 and question 1 on page 61 as an opportunity for guided learning and discussion. The second part of the project is for learners to then interpret their own data and answer question 2 on page 61.

All questions can be answered in learner’s NumberSense Workbooks. If teachers would prefer that projects are submitted in an alternative way (maybe for marking purposes), then they should advise the learners how to do so.

Because learners are collecting data, this project is not marked with a traditional memorandum. This project should be marked using the rubric supplied.

|                                       |  |   |   |     |
|---------------------------------------|--|---|---|-----|
| Research question (pg. 53)            | 3<br>At least two other research questions are clearly stated with relevant criteria of what it means to be <i>best</i> .                        | 2<br>One other research question is clearly stated with relevant criteria of what it means to be <i>best</i> .                                      | 1 0<br>The research question are neither well stated nor relevant to what it means to be <i>best</i> .                                    | [3] |
| Aeroplane construction (pgs. 54 – 56) | 3<br>Instructions were clearly followed to build three structurally sound aeroplanes.  | 2<br>Most instructions were followed and aeroplanes are mostly structurally sound.  | 1 0<br>Aeroplanes constructed, but not necessarily according to instructions. Some structural errors.                                     | [3] |
| Data collection (pg. 57)              | 4<br>Each of the three aeroplanes has been flown 10 times by each of the four group members and the distance flown recorded in the tables        | 3 2<br>Each of the three aeroplanes has been flown at least 9 times by 3 or more of the group members and the distance flown recorded in the table. | 1 0<br>At least two aeroplanes were flown at least 8 times by 3 or more of the group members and the distance flown recorded in the table | [4] |
| Data organisation 1 (pg. 58)          | 5 4<br>Range of distances has correctly been used to calculate appropriate distance intervals and tallies accurately reflect the data collected. | 3 2<br>Range of distances has correctly been used to calculate appropriate distance intervals. Some inaccuracies in tallies.                        | 1 0<br>Minor errors in calculating distance intervals results in significant inaccuracies in tallies.                                     | [5] |



|                                 |   |   |   |      |
|---------------------------------|---|---|---|------|
| Data organisation<br>2 (pg. 59) | 4<br>Scale and labels on vertical axis appropriate and bars drawn accurately report data in tally table.          | 3 2<br>Scale and labels on vertical axis are mostly appropriate and bars drawn mostly report data in tally table accurately.                  | 1 0<br>Errors scale and/or labels on vertical axis results in errors in accuracy of bars drawn. | [4]  |
| Data interpretation<br>(pg. 61) | 6 5<br>Interpretation shows evidence of a thoughtful analysis and explanation of the data presented in the graphs | 4 3 2<br>Interpretation shows some evidence of a thoughtful analysis but the link with what is presented in the graphs may lack some clarity. | 1 0<br>The interpretation is not supported by evidence in the data.                             | [6]  |
| TOTAL                           |   |   |   | [25] |

To prepare for this assessment, learners should revise from NumberSense Workbook 19, pages 1 – 46.

| Assessment framework: |  | Cognitive domain                                    |    |   |    |                   |   |       |
|-----------------------|--|---|----|---|----|-------------------|---|-------|
|                       |  | Knowing (K)   |    | Applying (A)                                  |    | Reasoning (R)     |   | TOTAL |
| Content area          | Number, operations and relationships (NOR) | 1(1), 2(1), 3(2), 4a(2), 5a(1), 5b(1), 5c(1), 5d(1) | 10 | 4b(2), 5e(1), 5f(1), 5g(1), 5h(1), 6(2), 7(2) | 10 | 8(1), 9(1), 10(2) | 4 | 24    |
|                       | Patterns, functions & algebra (PFA)        | 11a(1)  | 1  | 11a(1), 11b(2)                                | 3  | 11c(1)            | 1 | 5     |
|                       | Space & shape (SS)                         | 12(2), 13a(1)                                       | 3  | 13b(2), 14(1)                                 | 3  | 15(1)             | 1 | 7     |
|                       | Measurement (M)                            |   |    |   |    |                   |   |       |
|                       | Data handling (DH)                         |   |    |   |    |                   |   |       |
|                       | TOTAL                                      | 14  |    | 16  |    | 6                 |   | 35    |

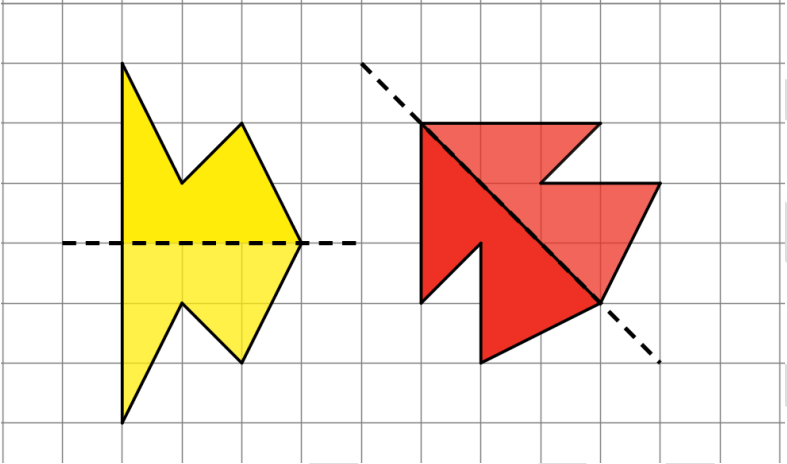
Memo:

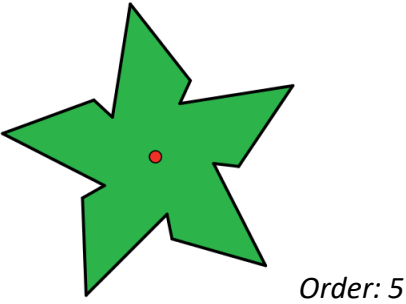
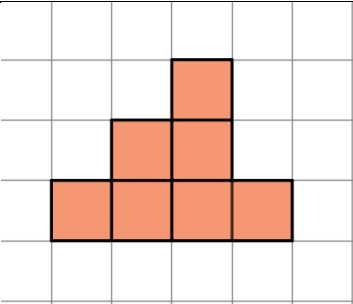
| Ques | Correct solution(s) | Comment                                | Content area | Page ref. | Cognitive domain | Mark allocation |
|------|---------------------|--|--------------|-----------|------------------|-----------------|
| 1.   | 5,25                | 1 mrk: correct                         | NOR          | 19.18     | K                | (1)             |
| 2.   | 2; 29 and 58        | 1 mrk: correct (and no extra selected) | NOR          | 19.17     | K                | (1)             |
| 3.a. | 0,6                 | 1 mrk: correct                         | NOR          |           | K                | (1)             |

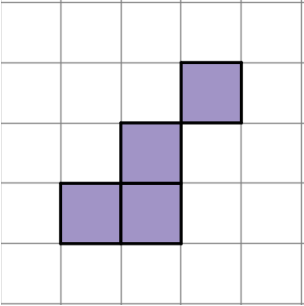
| Ques | Correct solution(s)   | Comment  | Content area | Page ref.                | Cognitive domain | Mark allocation |
|------|---|--|--------------|--------------------------|------------------|-----------------|
| 3.b  | 0,07  | 1 mrk: correct   | NOR          | 19.3;<br>19.18;<br>19.20 | K                | (1)             |
| 4.a. | $\frac{4}{5}$<br><i>Possible explanation:</i> <ul style="list-style-type: none"> <li>Because the number of pieces is the same, but the more pieces something is cut up, the smaller each piece will be.</li> <li>Could draw a number line with fifths and sevenths accurately marked.</li> <li>Could draw 2 “wholes” of the same size, accurately cut into fifths and sevenths and shade the correct pieces.</li> <li><math>\frac{4}{5} = \frac{28}{35}</math> and <math>\frac{4}{7} = \frac{20}{35}</math>; <math>28 &gt; 20</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid explanation<br><i>The last example, although correct, shows little understanding and could suggest that learners are simply memorising procedures without thinking.</i> | NOR          | 19.5                     | K                | (2)             |
| 4.b. | $\frac{5}{6}$<br><i>Possible explanation:</i> <ul style="list-style-type: none"> <li><math>\frac{5}{6}</math> is <math>\frac{1}{6}</math> less than 1 but <math>\frac{4}{5}</math> is <math>\frac{1}{5}</math> less than 1. Because <math>\frac{1}{6}</math> is smaller than <math>\frac{1}{5}</math>; <math>\frac{5}{6}</math> is bigger.</li> <li><math>\frac{4}{5} = \frac{24}{30}</math> and <math>\frac{5}{6} = \frac{25}{30}</math>; <math>24 &lt; 25</math></li> </ul>   | 1 mrk: correct<br>1 mrk: valid explanation   | NOR          | 19.5                     | A                | (2)             |
| 5.a. | 9800  | 1 mrk: correct   | NOR          | 19.4                     | K                | (1)             |
| 5.b. | 0,5   | 1 mrk: correct   | NOR          | 19.20                    | K                | (1)             |

| Ques | Correct solution(s)  | Comment  | Content area | Page ref.           | Cognitive domain | Mark allocation |
|------|--|--|--------------|---------------------|------------------|-----------------|
| 5.c. | 4,1  | 1 mrk: correct   | NOR          | 19.4, 19.7          | K                | (1)             |
| 5.d. | 18,7   | 1 mrk: correct   | NOR          | 19.4                | K                | (1)             |
| 5.e. | 1,5  | 1 mrk: correct   | NOR          | 19.7; 19.26         | A                | (1)             |
| 5.f. | 1,8  | 1 mrk: correct   | NOR          | 19.12               | A                | (1)             |
| 5.g. | 280  | 1 mrk: correct<br>Mentally as: $8 \times 35 = 4 \times 70$                   | NOR          | 19.11; 19.13; 19.15 | A                | (1)             |
| 5.h. | 420  | 1 mrk: correct<br>Mentally as: $4 \times 3 \times 5 \times 7 = 20 \times 21$ | NOR          | 19.27               | A                | (1)             |
| 6.   | 26<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li><math>156 - 60(10) \rightarrow 96 - 60(10) \rightarrow 36 - 30(5) \rightarrow 6 - 6(1)</math><br/><math>10 + 10 + 5 + 1 = 26</math></li> <li><math>156 = 120 + 36; 120 \div 6 = 20 \text{ and } 36 \div 6 = 6</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking                                      | NOR          | 19.9; 19.19         | A                | (2)             |

| Ques           | Correct solution(s)  | Comment  | Content area | Page ref. | Cognitive domain | Mark allocation |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
|----------------|--|--|--------------|-----------|------------------|-----------------|---|----|----------------|---|---|----|----|----|----|--|-----|--------------------------|----------------|-----|
| 7.             | 8<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li><math>2\frac{1}{4} + 2\frac{1}{4} \rightarrow 4\frac{2}{4} + 2\frac{1}{4} \rightarrow 6\frac{3}{4} + 2\frac{1}{4} \rightarrow 9</math>. If 9 viennas are shared by 4 children so each child gets <math>2\frac{1}{4}</math>; then 18 (double) viennas will be shared by <math>4 \times 2 = 8</math> children so that each child gets <math>2\frac{1}{4}</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking              | NOR          | 19.14     | A                | (2)             |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
| 8.             | $\frac{4}{36}$ or $\frac{1}{9}$  | 1 mrk: correct<br><i>Accept equivalent fractions</i> | NOR          |           | R                | (1)             |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
| 9.             | 6  | 1 mrk: correct                                       | NOR          |           | R                | (1)             |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
| 10.            | R250<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>R100 off jacket is <math>\frac{100}{600} = \frac{1}{6}</math> saving and R20 off shirt is <math>\frac{20}{120} = \frac{1}{6}</math> saving. So, <math>\frac{1}{6}</math> of R300 = R50. <math>R300 - R50 = R250</math></li> </ul>   | 1 mrk: correct<br>1 mrk: valid thinking              | NOR          |           | R                | (2)             |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
| 11.a.          | <table border="1"> <tr> <td>Picture number</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>10</td></tr> <tr> <td>No. of squares</td><td>5</td><td>8</td><td>11</td><td>14</td><td>17</td><td>32</td></tr> </table>   | Picture number                                       | 1            | 2         | 3                | 4               | 5 | 10 | No. of squares | 5 | 8 | 11 | 14 | 17 | 32 | 1 mrk: 14 and 17 both correct<br>1 mrk: 32 | PFA | 19.8;<br>19.14;<br>19.24 | K(1) &<br>A(1) | (2) |
| Picture number | 1  | 2  | 3            | 4         | 5                | 10              |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |
| No. of squares | 5  | 8  | 11           | 14        | 17               | 32              |   |    |                |   |   |    |    |    |    |  |     |                          |                |     |

| Ques  | Correct solution(s)   | Comment   | Content area | Page ref.                 | Cognitive domain | Mark allocation |
|-------|---|---|--------------|---------------------------|------------------|-----------------|
| 11.b. | <i>Picture no. <math>\rightarrow \times 3 \rightarrow + 2 \rightarrow</math> No. of squares</i> | 1 mrk: $\times 3$<br>1 mrk: $+ 2$ and complete flow diagram with "No. of squares" | PFA          | 19.14;<br>19.34;<br>19.36 | A                | (2)             |
| 11.c. | 27  | 1 mrk: correct  | PFA          |                           | R                | (1)             |
| 12.   |              | 1 mrk: each correct   | SS           | 19.39;<br>19.41           | K                | (2)             |
| 13.a. | No  | 1 mrk: correct  | SS           | 19.39                     | K                | (1)             |

| Ques  | Correct solution(s)   | Comment  | Content area | Page ref.       | Cognitive domain | Mark allocation |
|-------|---|--|--------------|-----------------|------------------|-----------------|
| 13.b. | Yes.<br><br> | 1 mrk: approximate centre of rotation marked and<br><br>1 mrk: correct order, i.e. 5 | SS           | 19.40;<br>19.41 | SS               | (2)             |
| 14.   |             | 1 mrk: correct   | SS           | 19.46;<br>19.47 | SS               | (1)             |

| Ques | Correct solution(s)   | Comment  | Content area | Page ref.       | Cognitive domain | Mark allocation |
|------|---|--|--------------|-----------------|------------------|-----------------|
| 15.  |  | 1 mrk correct<br><i>Accept rotations of this arrangement</i> | SS           | 19.46;<br>19.47 | R                | (1)             |



*This examination covers all content from NumberSense Comprehensive Workbooks 17, 18, 19 and 20.*

*It is recommended that learners complete this examination over 2 days (preferably consecutive days) and that they have at least 1 hour to complete each part, i.e. 1 hour for Part A and 1 hour for Part B.*

Assessment framework:

|              |  | Cognitive domain   |    |   |    |                            |   |       |
|--------------|--|--|----|---|----|----------------------------|---|-------|
|              |  | Knowing (K)  |    | Applying (A)  |    | Reasoning (R)              |   | TOTAL |
| Content area | Number, operations and relationships (NOR) | 1(3), 2(2), 3a(1), 4(1), 5a(1), 6a(1), 6b(1), 6b(1), 6d(1), 6e(1), 6f(1), 6i(1), 6k(1) | 16 | 3b(1), 5b(1), 6g(1), 6h(1), 6j(1), 7(6), 8(2), 9(2) | 15 | 6l(1), 10(2), 11(2), 12(2) | 7 | 38    |
|              | Patterns, functions & algebra (PFA)        | 13a(1), 13b(2)   | 3  | 13c(2), 14(2)                                       | 4  | 15(2)                      | 2 | 9     |
|              | Space & shape (SS)                         | 16a(1), 16b(1), 17(1), 18a(1)  | 4  | 16a(1), 16b(1), 18b(1), 18c(2)                      | 5  |                            |   | 9     |
|              | Measurement (M)                            | 19(1), 20(2), 21a(1)   | 4  | 21b(1), 22(2), 23(2)                                | 5  | 24(2)                      | 2 | 11    |
|              | Data handling (DH)                         | 25a(2), 26a(1)   | 3  | 25b(2), 26b(1)                                      | 3  | 26c(1), 26d(1)             | 2 | 8     |
|              | TOTAL                                      | 30   |    | 32  |    | 13                         |   | 75    |

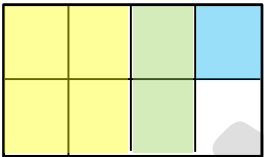
## Part A Memo:

| Ques | Correct solution(s) | Comment                 | Content area | Page ref.                                    | Cognitive domain | Mark allocation |
|------|---------------------|-------------------------|--------------|--|------------------|-----------------|
| 1.a. | 12 and 120          | 1 mrk: 12 and 120 only  | NOR          | 17.16;<br>17.30;<br>18.1;<br>20.7;<br>20.8   | K                | (1)             |
| 1.b. | 3; 5 and 9          | 1 mrk: 3; 5 and 9 only  | NOR          | 20.8;<br>20.30                               | K                | (1)             |
| 1.c. | 2; 7 and 13         | 1 mrk: 2; 7 and 13 only | NOR          | 16.23;<br>18.38;<br>20.8;<br>20.24;<br>20.30 | K                | (1)             |
| 2.a. | 825                 | 1 mrk: correct          | NOR          | 17.1   | K                | (1)             |
| 2.b. | 62000               | 1 mrk: correct          | NOR          | 18.27;<br>20.7;<br>20.13                     | K                | (1)             |
| 3.a. | 5,75                | 1 mrk: correct          | NOR          | 17.13;                                       | K                | (1)             |
| 3.b. | 10,36               | 1 mrk: correct          | NOR          | 19.3;<br>19.18;                              | A                | (1)             |
| 4.   | $6\frac{37}{100}$   | 1 mrk: correct          | NOR          | 20.15  | K                | (1)             |

| Ques | Correct solution(s) | Comment        | Content area | Page ref.                         | Cognitive domain | Mark allocation |
|------|---------------------|----------------|--------------|-----------------------------------|------------------|-----------------|
| 5.a. | $\frac{3}{8}$       | 1 mrk: correct | NOR          | 17.27;<br>18.29;<br>19.5          | K                | (1)             |
| 5.b. | $\frac{9}{11}$      | 1 mrk: correct | NOR          | 19.5                              | A                | (1)             |
| 6.a. | 13000               | 1 mrk: correct | NOR          |                                   | K                | (1)             |
| 6.b. | 22,1                | 1 mrk: correct | NOR          | 17.2;<br>17.8;<br>17.14           | K                | (1)             |
| 6.c. | $4\frac{3}{5}$      | 1 mrk: correct | NOR          | 17.22                             | K                | (1)             |
| 6.d. | 3500                | 1 mrk: correct | NOR          | 18.2                              | K                | (1)             |
| 6.e. | 16,35               | 1 mrk: correct | NOR          | 18.7;<br>18.9;<br>18.20           | K                | (1)             |
| 6.f. | 28                  | 1 mrk: correct | NOR          | 17.28;<br>17.36;<br>18.1;<br>19.6 | K                | (1)             |

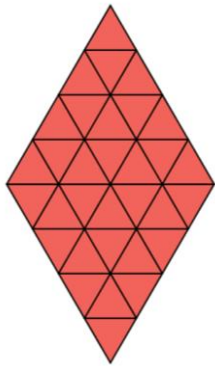
| Ques | Correct solution(s) | Comment   | Content area | Page ref.                          | Cognitive domain | Mark allocation |
|------|---------------------|---|--------------|------------------------------------|------------------|-----------------|
| 6.g. | 540                 | 1 mrk: correct<br><i>Can be done mentally by multiplying by 10 and compensating, i.e. <math>450 + 90</math></i> | NOR          | 19.33;<br>19.37                    | A                | (1)             |
| 6.h. | 2,7                 | 1 mrk: correct  | NOR          | 20.1                               | A                | (1)             |
| 6.i. | 52                  | 1 mrk: correct Can be done mentally by halving and halving again  | NOR          | 20.6;<br>20.11                     | K                | (1)             |
| 6.j. | 2,57                | 1 mrk: correct  | NOR          | 20.21                              | A                | (1)             |
| 6.k. | 450                 | 1 mrk: correct  | NOR          | 17.22;<br>20.4;<br>20.19;<br>20.28 | K                | (1)             |
| 6.l. | $\frac{1}{15}$      | 1 mrk: correct  | NOR          | 20.26                              | R                | (1)             |

| Ques | Correct solution(s)   | Comment                                 | Content area | Page ref.                                    | Cognitive domain | Mark allocation |
|------|---|---|--------------|--|------------------|-----------------|
| 7.a. | 3282<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li><math>6547 - 3200 \rightarrow 3347 - 60 \rightarrow 3287 - 5 \rightarrow 3282</math></li> <li><math>3265 + 35 \rightarrow 3300 + 3200 \rightarrow 6500 + 47 \rightarrow 6547</math>. <math>35 + 3200 + 47 = 3282</math></li> </ul>   |   |              |  |                  | (1)             |
| 7.b. | 672<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>Double 168 = 336 and double 336 = 672</li> <li><math>160 + 160 + 160 + 160 = 400 + 240 = 640</math> and <math>8 + 8 + 8 + 8 = 32</math>; <math>640 + 32 = 672</math></li> <li><math>168 = 100 + 60 + 8</math>. <math>100 \times 4 = 400</math>; <math>60 \times 4 = 240</math> and <math>8 \times 4 = 32</math>. <math>400 + 240 + 32 = 672</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking | NOR          | 18.28;<br>19.2;<br>19.11;<br>19.23;<br>19.25 | A                | (2)             |
| 7.c. | 807<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li><math>4842 = 4800 + 42</math>, <math>4800 \div 6 = 800</math> and <math>42 \div 6 = 7</math></li> <li><math>4842 - 1200(200) \rightarrow 3642 - 2400(400) \rightarrow 1242 - 1200(200) \rightarrow 42 - 42(7)</math>. <math>200 + 400 + 200 + 7 = 807</math></li> </ul>   | 1 mrk: correct<br>1 mrk: valid thinking | NOR          | 20.25  | A                | (2)             |

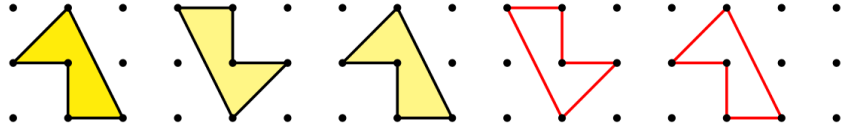
| Ques | Correct solution(s)   | Comment   | Content area | Page ref.                | Cognitive domain | Mark allocation |
|------|---|---|--------------|--------------------------|------------------|-----------------|
| 8.   | $\frac{1}{8}$<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>Using sketch/diagram.  </li> <li><math>\frac{1}{2} = \frac{4}{8}</math> and <math>\frac{1}{4} = \frac{2}{8}</math>. <math>\frac{4}{8} + \frac{2}{8} + \frac{1}{8} = \frac{7}{8}</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking                                       | NOR          | 20.19                    | A                | (2)             |
| 9.   | 1-tenth or $\frac{1}{10}$<br><i>Possible thinking:</i><br>$\frac{1}{7}$ of 7-tenths = $\frac{1}{10}$  | 1 mrk: correct<br>1 mrk: valid thinking<br><i>Accept equivalent fractions</i> | NOR          | 19.10;<br>19.5;<br>19.31 | A                | (2)             |
| 10.  | 34,50<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>1 large pizza costs the same as 3 × small pizzas. <math>R11,50 \times 3 = R34,50</math></li> </ul>  | 1 mrk: correct<br>1 mrk: valid thinking                                       | NOR          |                          | R                | (2)             |

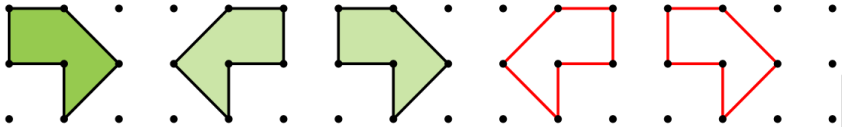
| Ques | Correct solution(s)   | Comment                                 | Content area | Page ref.                 | Cognitive domain | Mark allocation |
|------|---|---|--------------|---------------------------|------------------|-----------------|
| 11.  | 2400<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>For every 6 hours, Buli works half the time. He should earn half the money.</li> <li>Every hour worked, <math>R4800 \div 6 = R800</math> is paid. <math>R800 \times 3 = R24000</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking | NOR          | 17.12;<br>18.19;<br>20.12 | R                | (2)             |
| 12.  | 9<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>There will be 4 red beads for every 3 purple beads since the green beads are doubled. <math>4 \times 3 = 12</math>, so <math>3 \times 3 = 9</math>.</li> </ul>                                      | 1 mrk: correct<br>1 mrk: valid thinking | NOR          |                           | R                | (2)             |

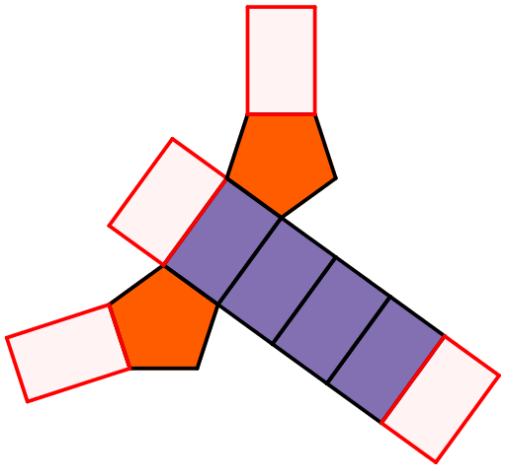
## Part B Memo:

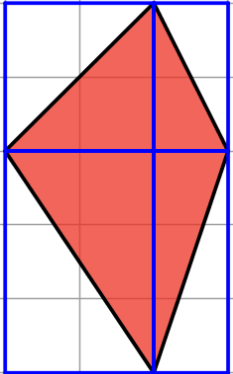
| Ques             | Correct solution(s)  | Comment                                 | Content area | Page ref.                | Cognitive domain | Mark allocation |   |   |                  |   |   |    |    |    |    |  |     |   |   |     |
|------------------|--|---|--------------|--------------------------|------------------|-----------------|---|---|------------------|---|---|----|----|----|----|--|-----|---|---|-----|
| 13.a.            |   | 1 mrk: correct                          | PFA          | 17.18;<br>17.25;<br>20.3 | K                | (1)             |   |   |                  |   |   |    |    |    |    |  |     |   |   |     |
| 13.b             | <table border="1"> <tr> <td>Pic. no.</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> <tr> <td>No. of triangles</td><td>2</td><td>8</td><td>18</td><td>32</td><td>50</td><td>72</td></tr> </table>                      | Pic. no.                                | 1            | 2                        | 3                | 4               | 5 | 6 | No. of triangles | 2 | 8 | 18 | 32 | 50 | 72 | 2 mrks: all 5 correct or<br>1 mrk: 3-4 correct | PFA | 17.4;<br>17.18;<br>17.25;<br>18.3;<br>19.8;<br>20.3 | K | (2) |
| Pic. no.         | 1  | 2                                       | 3            | 4                        | 5                | 6               |   |   |                  |   |   |    |    |    |    |  |     |   |   |     |
| No. of triangles | 2  | 8                                       | 18           | 32                       | 50               | 72              |   |   |                  |   |   |    |    |    |    |  |     |   |   |     |
| 13.c             | <p>200</p> <p><i>Possible thinking:</i></p> <ul style="list-style-type: none"> <li><math>2 \times 10 \times 10</math></li> <li><math>72 + 26 \rightarrow 98 + 30 \rightarrow 128 + 34 \rightarrow 162 + 38 \rightarrow 200</math></li> </ul> | 1 mrk: correct<br>1 mrk: valid thinking | PFA          | 20.3                     | A                | (2)             |   |   |                  |   |   |    |    |    |    |  |     |   |   |     |

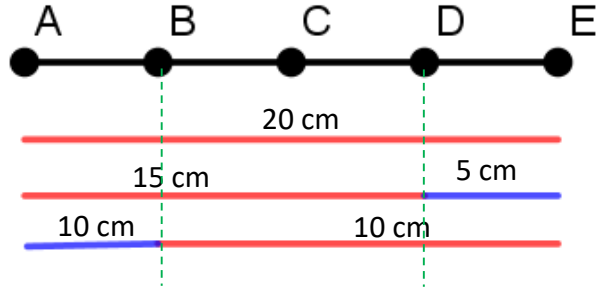


| Ques          | Correct solution(s)   | Comment   | Content area | Page ref.  | Cognitive domain | Mark allocation |   |               |   |   |    |    |    |   |     |  |   |     |
|---------------|---|---|--------------|--|------------------|-----------------|---|---------------|---|---|----|----|----|---|-----|--|---|-----|
| 14.           | $Input \rightarrow \times 6 \rightarrow -1 \rightarrow Output$  | 1 mrk: $\times 6$<br>1 mrk: $-1$<br><i>Must be in correct order</i> | PFA          | 18.8;<br>18.13;<br>18.24;<br>19.10;<br>19.32;<br>20.27 | A                | (2)             |   |               |   |   |    |    |    |   |     |  |   |     |
| 15.           | 14<br><i>Possible thinking:</i><br><ul style="list-style-type: none"><li><i>Tabulate information:</i><table><tr><td>Days</td><td>1</td><td>2</td><td>3</td><td>4</td><td>?</td></tr><tr><td>No. of blocks</td><td>5</td><td>8</td><td>11</td><td>14</td><td>44</td></tr></table><i>No. of blocks <math>\rightarrow -2 \rightarrow \div 3 \rightarrow Days</math></i><ul style="list-style-type: none"><li><math>5 + 3 + 3 + 3 + \dots = 44</math>. So <math>44 - 5 = 39</math>; <math>39 \div 3 = 13</math>; <math>13 + 1 = 14</math></li></ul></li></ul> | Days  | 1            | 2  | 3                | 4               | ? | No. of blocks | 5 | 8 | 11 | 14 | 44 | 1 mrk: correct<br>1 mrk: valid thinking | PFA |  | R | (2) |
| Days          | 1   | 2   | 3            | 4  | ?                |                 |   |               |   |   |    |    |    |   |     |  |   |     |
| No. of blocks | 5   | 8   | 11           | 14   | 44               |                 |   |               |   |   |    |    |    |   |     |  |   |     |
| 16.a.         | <br>Rotation  | 1 mrk: pattern correct<br>1 mrk: rotation                           | SS           | 17.39;<br>17.40;<br>17.41                              | K&A              | (2)             |   |               |   |   |    |    |    |   |     |  |   |     |

| Ques  | Correct solution(s)  | Comment   | Content area | Page ref.                           | Cognitive domain | Mark allocation |
|-------|--|---|--------------|-------------------------------------|------------------|-----------------|
| 16.b  |  <p>Reflection</p> | 1 mrk: pattern correct<br>1 mrk: reflection                         | SS           |                                     | K&A              | (2)             |
| 17.   | B, D and G   | 1 mrk: all correct and no extra                                     | SS           | 18.47;<br>18.48;<br>18.49;<br>18.50 | K                | (1)             |
| 18.a. | Pentagonal-based pyramid (or pentagonal pyramid)   | 1 mrk: correct<br><br><i>Do not penalise for incorrect spelling</i> | SS           | 18.40                               | K                | (1)             |
| 18.b. | 10   | 1 mrk: correct  | SS           | 18.40;<br>18.41;<br>18.42;<br>18.44 | A                | (1)             |

| Ques  | Correct solution(s)   | Comment   | Content area | Page ref.                 | Cognitive domain | Mark allocation |
|-------|---|---|--------------|---------------------------|------------------|-----------------|
| 18.c. |  | <p>2 mrks: all 4 possible positions correct and rectangles fairly accurately drawn or</p> <p>1 mrk: at least 2 possible positions correct and rectangles fairly accurately drawn or all 4 possible positions correct, but rectangles are inaccurately drawn</p> | SS           | 20.40;<br>20.44           | A                | (2)             |
| 19.   | 200°C   | 1 mrk: correct  | M            | 19.51;<br>19.52           | K                | (1)             |
| 20.a. | 5:45 pm   | 1 mrk: correct  | M            | 17.49                     | K                | (1)             |
| 20.b. | 17:45   | 1 mrk: correct  | M            | 17.49                     | K                | (1)             |
| 21.a. | 12  | 1 mrk: correct  | M            | 20.52;<br>20.53;<br>20.54 | K                | (1)             |
| 21.b. | 18  | 1 mrk: correct  | M            | 18.56;<br>20.54           | A                | (1)             |

| Ques | Correct solution(s)  | Comment                                 | Content area | Page ref.       | Cognitive domain | Mark allocation |
|------|--|---|--------------|-----------------|------------------|-----------------|
| 22.  | $7\frac{1}{2}$ or 7,5<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>Half of 4 + half of 2 + half of 6 + half of 3 = <math>2 + 1 + 3 + 1\frac{1}{2} = 7\frac{1}{2}</math></li> </ul>  | 1 mrk: correct<br>1 mrk: valid thinking | M            | 20.55           | A                | (2)             |
| 23.  | 30<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li><math>2 \times 3 \times 5 = 30</math></li> </ul>  | 1 mrk: correct<br>1 mrk: valid thinking | M            | 20.61;<br>20.62 | A                | (2)             |

| Ques  | Correct solution(s)   | Comment                                 | Content area | Page ref.       | Cognitive domain | Mark allocation |
|-------|---|---|--------------|-----------------|------------------|-----------------|
| 24.   | 5 cm<br><i>Possible thinking:</i> <ul style="list-style-type: none"> <li>Diagram not drawn to scale:<br/> <math>15 - 10 = 5</math></li> </ul>  | 1 mrk: correct<br>1 mrk: valid thinking | M            |                 | R                | (2)             |
| 25.a. | 38 and 36   | 1 mrk: each correct                     | DH           | 17.55;<br>17.56 | K                | (2)             |
| 25.b. | Disagree (No)<br><i>Possible explanations:</i> <ul style="list-style-type: none"> <li>Selwyn has not collected enough data yet.</li> <li>Selwyn should compare with previous data from March.</li> </ul>                        | 1 mrk: disagree<br>1 mrk: valid reason  | DH           | 17.60;<br>17.62 | A                | (2)             |
| 26.a. | 17  | 1 mrk: correct                          | DH           | 17.54           | K                | (1)             |
| 26.b. | chocolate   | 1 mrk: correct                          | DH           |                 | A                | (1)             |

| Ques  | Correct solution(s) | Comment   | Content area | Page ref. | Cognitive domain | Mark allocation |
|-------|---------------------|---|--------------|-----------|------------------|-----------------|
| 26.c. | D                   | <p>1 mrk: correct</p> <p><i>A and D are both good options because the number of strawberry ice creams is half the number of chocolate ice creams, however the number of bubblegum ice creams is not half the number of banana ice creams.</i></p> | M            |           | R                | (1)             |
| 26.d. |                     | <p>1 mrk: correct</p> <p><i>The bar should be just lower than Strawberry bar. Award the mark if the bar has been drawn correctly on graph A</i></p>   | DH           |           | R                | (1)             |