

The logo features the letters 'BE' in a bold, sans-serif font. The 'B' is bright blue, and the 'E' is black. The letters are set against a white background within a black rectangular frame.

INSPIRING HOPE

The logo consists of the letters 'OSK' stacked above 'ESC' in a dark blue, serif font. A stylized, grey leaf-like graphic is positioned behind the letters, curving around them.

# **MATHEMATICS MEMORANDUM**

## **Grade R-9**

This document is compiled by the  
Beyond Education program students  
of 2020.

## GRADE R

- None

## GRADE 1

### Activity 2

- 1) 9
- 2) 8
- 3) 7
- 4) 6
- 5) 10
- 6) 20
- 7) 1
- 8) 2
- 9) 3
- 10) 4

### Activity 3

> Greater than

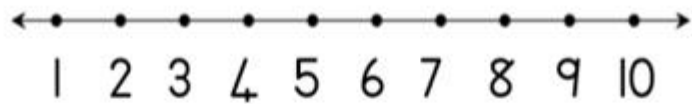
< Less than

= Equal

- a) >
- b) <
- c) >
- d) >
- e) <
- f) =
- g) <
- h) >
- i) <

- j) >
- k) <
- l) <
- m) >
- n) <
- o) <
- p) <

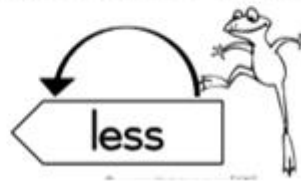
**Activity 4**



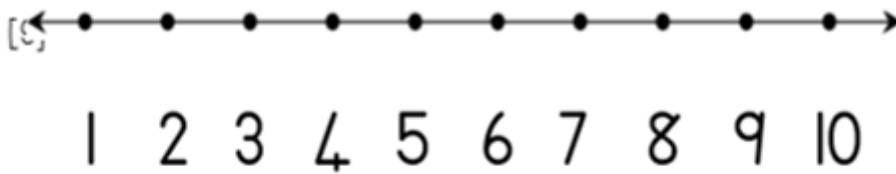
🌸 1 more than 2 = 3     🎁 2 more than 5 = 7

🌙 1 less than 3 = 2     ☆ 1 more than 1 = 2

🌙 2 more than 4 = 6     ☆ 2 less than 5 = 3



**Activity 5**



| ◀ before     | between          | after ▶     |
|--------------|------------------|-------------|
| <u>1</u> , 2 | 1, <u>2</u> , 3  | 3, <u>4</u> |
| <u>3</u> , 4 | 5, <u>6</u> , 7  | 5, <u>6</u> |
| <u>6</u> , 7 | 8, <u>9</u> , 10 | 8, <u>9</u> |

# GRADE 2

## Activity 1

### Question 1:

1. Twenty-seven ... 27
2. Twelve ... 12
3. Forty-one ... 41
4. One hundred and fifty-two ... 152
5. Two hundred ... 200

### Question 2:

1. 4 ... Four
2. 89 ... Eighty-nine
3. 114 ... One hundred and fourteen
4. 55 ... Fifty-five
5. 199 ... One hundred and ninety-nine

### Question 3:

1. 10; 9; 8; 7; 6; 5 ... 4; 3; 2
2. 2; 4; 6; 8; 10 ... 12; 14; 16
3. 50; 45; 40; 35; 30 ... 25; 20; 15
4. 9; 12; 15; 18; 21 ... 24; 27; 30
5. 200; 190; 180; 170; 160 ... 150; 140; 130

## Activity 2

### Question 1:

1.
  - a. 152; 12; 80; 2; 7; 44; 69 ... 2; 7; 12; 44; 69; 80; 152
  - b. 99; 33; 65; 14; 31; 75 ... 14; 31; 33; 65; 75; 99
2.
  - a. 3; 44; 32; 89; 156; 77 ... 156; 89; 77; 44; 32; 3
  - b. 45; 67; 13; 8; 99; 160 ... 160; 99; 67; 45; 13; 8

### Question 2:

1. What is half of 24? ... 12
2. What is double 5? ... 10
3. What is half of 30? ... 15
4. What is half of 6? ... 3
5. What is double 4? ... 8

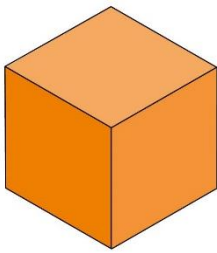
### Question 3:

1.  $50 \text{ cupcakes} - 20 \text{ friends} = 30 \text{ cupcakes left over}$
2.  $14 \text{ new tennis balls} - 5 \text{ from Amanda} = 9 \text{ tennis balls from Chloe}$
3.  $3 \text{ glasses of milk each day} \times 7 \text{ days in a week} = 21 \text{ glasses of milk in a week}$
4.  $5 \text{ dogs} \times 4 \text{ legs each} = 20 \text{ legs in total}$
5.  $7 \text{ days in a week} \times 4 \text{ weeks} = \text{Sophie brushes her hair } 28 \text{ times in } 4 \text{ weeks.}$

### Activity 3

#### Question 1:

What is the name of the following shapes?



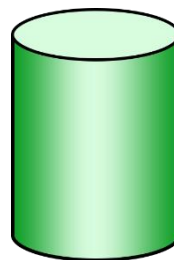
Cube



Cone



Sphere



Cylinder

## Question 2:

1. Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday  
Or  
Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday
2. January, February, March, April, May, June, July, August, September, October, November, December
3. What is the time on the following clocks?



Three o'clock



Half past two



Quarter past eight



Quarter to eleven

## Activity 4

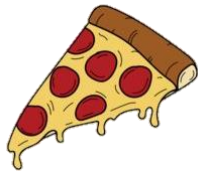
### Question 1:

1. Place the following objects in order from lightest to heaviest.

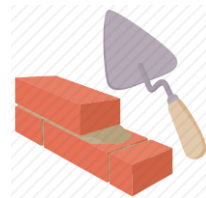
Feathers



Slice of pizza



Bricks



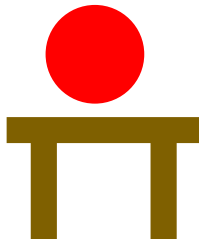
House



### Question 2:

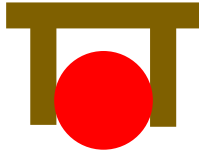
Describe the position of the ball when compared to the table. E.g. the ball is behind the table.

1.



The ball is **on top of** the table.

2.



The ball is **under** the table

3.



The ball is **next to** the table

### Question 3:

1. 5; 10; 15; 20 ... 25; 30; 35; 40; 45
2. 30; 33; 36; 39 ... 42; 45; 48; 51; 54
3. 40; 38; 36; 34 ... 32; 30; 28; 26; 24

### Activity 5

#### Question 1:

1. 109 ... one hundred and nine
2. 37 ... thirty-seven
3. 88 ... eighty-eight
4. 44 ... forty-four
5. 126 ... one hundred and twenty-six

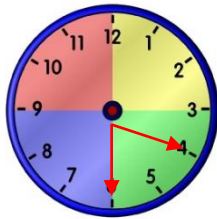
#### Question 2:

1.  $30 + 42 + 74 = 146$  potatoes
2.  $R20 + R15 + R50 = R85$
3.  $50 - 10 - 25 = 15$  jumping jacks left

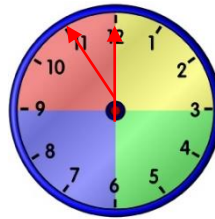
**Question 3:**

Complete the time in the following clocks:

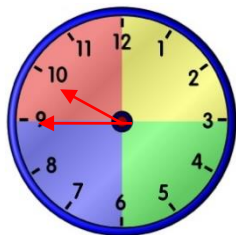
1. Half past four



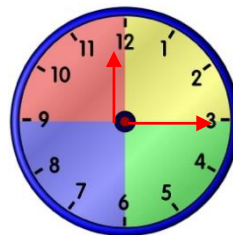
3. Eleven o'clock



2. Quarter to ten



4. Quarter past twelve



## GRADE 3

### Activity 2

1.  $15 + 10 + 10 = 35$  There are 35 planks of wood.
2.  $9 + 31 + 55 = 95$  They have 95 pieces of nails.
3.  $24 + 14 + 12 + 20 = 70$  Charlie's father used 70cm of rope.
4.  $20 + 15 + 34 = 69$  They should buy a total of 69 litres of paint.
5.  $15 + 10 + 5 = 30$  There were 30 cookies eaten.

### Activity 3

- |       |        |         |
|-------|--------|---------|
| 1. 29 | 7. 22  | 13. 672 |
| 2. 29 | 8. 80  | 14. 449 |
| 3. 23 | 9. 78  | 15. 406 |
| 4. 59 | 10. 65 | 16. 184 |
| 5. 60 | 11. 20 |         |
| 6. 90 | 12. 88 |         |

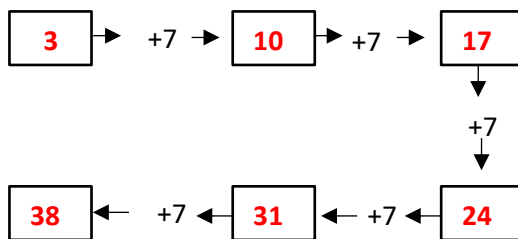
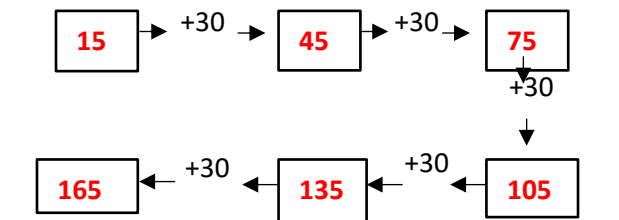
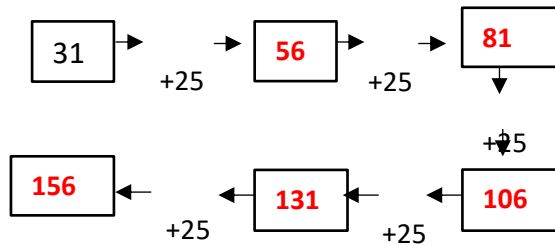


## **Activity 5**

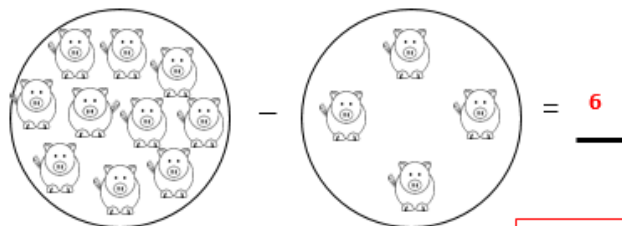
1. 7
2. 13
3. 5
4. 6
5. 79
6. 90
7. 65
8. 21
9. 17
10. 9
11. 77
12. 26
13. 92
14. 142

# GRADE 4

## Activity 1



## Activity 2



[https://www.clipart\\_email/clipart/white-pig-clipart-14623.htm](https://www.clipart_email/clipart/white-pig-clipart-14623.htm)

$$10 \text{ (pigs)} - 4 \text{ (pigs)} = 6 \text{ (pigs)}$$

$$25 \text{ (chicks)} - 11 \text{ (chicks)} = 14 \text{ (chicks)}$$



### Activity 3

1.  $20 + 20 = 40$
2.  $268 - 268 = 0$
3.  $28 + 0 = 28$
4.  $500 - 0 = 500$
5.  $2 + 8 = 10$
  
6.  $13 + 7 = 20$
7.  $20 - 17 = 3$
8.  $15 + 25 = 40$
9.  $20 - 7 = 13$
10.  $16 + 4 = 20$
  
11.  $15 + 15 = 30$
12.  $16 + 14 = 30$
13.  $30 - 20 = 10$
14.  $25 - 5 = 20$
15.  $37 - 3 + 3 = 37$
  
16.  $27 + 6 - 6 = 27$
17.  $20 + 10 - 10 = 20$
18.  $12 - 3 + 3 = 12$
19.  $34 + 5 - 5 = 34$
20.  $18 - 2 + 2 = 18$
  
21.  $306 - 0 = 306$
22.  $8 + 2 = 10$
23.  $10 - 4 = 6$
24.  $3 + 7 = 10$
25.  $20 + 0 = 20$
  
26.  $30 + 20 = 50$
27.  $80 + 20 = 100$
28.  $40 - 20 = 20$
29.  $35 - 15 = 20$
30.  $9 + 1 = 10$

### Activity 4

|     |   |    |           |           |    |           |           |           |           |    |
|-----|---|----|-----------|-----------|----|-----------|-----------|-----------|-----------|----|
|     | 1 | 2  | 3         | 4         | 5  | 6         | 7         | 8         | 9         | 10 |
| X 6 | 6 | 12 | <b>18</b> | <b>24</b> | 30 | <b>36</b> | <b>42</b> | <b>48</b> | <b>54</b> | 60 |

|     |          |          |           |    |           |           |    |           |           |    |
|-----|----------|----------|-----------|----|-----------|-----------|----|-----------|-----------|----|
|     | 1        | 2        | 3         | 4  | 5         | 6         | 7  | 8         | 9         | 10 |
| X 4 | <b>4</b> | <b>8</b> | <b>12</b> | 16 | <b>20</b> | <b>24</b> | 28 | <b>32</b> | <b>36</b> | 40 |

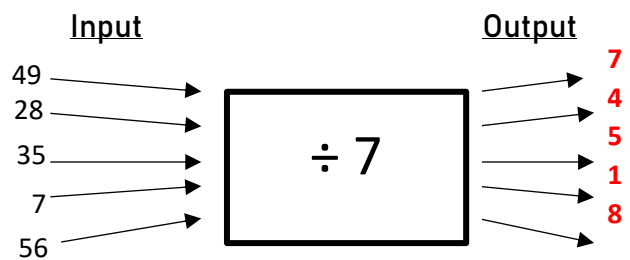
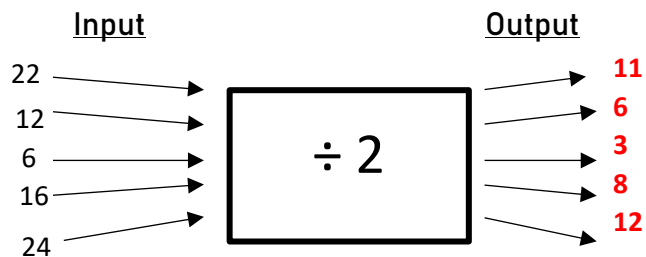
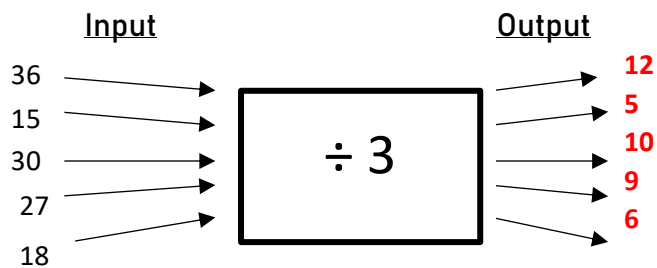
|     |   |   |   |   |    |    |    |    |    |    |
|-----|---|---|---|---|----|----|----|----|----|----|
|     | 1 | 2 | 3 | 4 | 5  | 6  | 7  | 8  | 9  | 10 |
| X 2 | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |

|     |   |    |    |    |    |    |    |    |    |    |
|-----|---|----|----|----|----|----|----|----|----|----|
|     | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| X 9 | 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 |

|     |   |   |   |    |    |    |    |    |    |    |
|-----|---|---|---|----|----|----|----|----|----|----|
|     | 1 | 2 | 3 | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| X 3 | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 |

|     |   |    |    |    |    |    |    |    |    |    |
|-----|---|----|----|----|----|----|----|----|----|----|
|     | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| X 7 | 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 |

**Activity 5**



# GRADE 5

## Activity 1

### Question 1

|   | Tens    | hundreds | thousands |
|---|---------|----------|-----------|
| A | 789 320 | 789 300  | 789 000   |
| B | 528 740 | 529 700  | 529 000   |
| C | 501 100 | 501 100  | 501 000   |
| D | 441 160 | 441 200  | 441 000   |
| E | 287 560 | 288 600  | 288 000   |
| F | 487 920 | 488 0900 | 488 0     |

### Question 2

40 800   41 200   41 600   42 000   42 400   42 800   43 200   43 600  
44 000   44 400   44 800   45 200

### Question 3

|        |        |        |        |        |
|--------|--------|--------|--------|--------|
| 9 000  | 11 250 | 13 500 | 15 750 | 18 000 |
| 20 250 | 22 500 | 24 750 | 27 000 | 29 250 |
| 31 500 | 33 750 | 36 000 | 38 250 | 40 500 |
| 42 750 | 45 000 | 47 250 | 49 500 | 51 750 |
| 54 000 | 56 250 | 58 500 | 60 750 | 63 000 |

### Question 4

- 21 965   47 677   66 152   95 923   98 899   98 987
- 65 153   31 999   31 001   27 180   20 122   20 121
- 637 173   641 245   646 091   656 488   662 786   673 168   680 901

### Question 5

- (a)  $63\,372 > 63\,002$       (b)  $86\,762 > 68\,872$       (c)  $27\,901 < 28\,817$   
(d)  $35\,530 < 53\,305$       (e)  $390\,860 = 390\,860$       (f)  $701\,847 < 710\,874$

**Question 6**

(a) 87 015

(b) 75 925

**Activity 2****Question 1**

1.  $\frac{1}{10}$
2.  $\frac{1}{4}$

**Question 2**(a)  $\frac{1}{4}$  ℓ milk  $>$   $\frac{1}{5}$  ℓ milk(b)  $\frac{1}{4}$  ℓ milk  $=$   $\frac{2}{8}$  ℓ milk(c)  $\frac{3}{10}$  ℓ milk  $<$   $\frac{3}{8}$  ℓ milk(d)  $\frac{4}{5}$  milk  $=$   $\frac{8}{10}$  ℓ milk**Question 3**(a)  $\frac{6}{8}$  kg copper (b)  $\frac{3}{8}$  kg copper (c)  $\frac{5}{7}$  kg copper (d)  $\frac{9}{15}$  kg copper  $=$   $\frac{3}{5}$  kg copper**Question 4**(a) Older son:  $\frac{2}{3}$ ; younger son:  $\frac{1}{3}$ 

(b) 24 and 12 cookies respectively

**Question 5**Less, because  $\frac{1}{4} < \frac{1}{3}$  of a milk tart. (If there are 15 people and 5 milk tarts, each person can eat one third of a milk tart)**Question 6**A third  $\frac{1}{3}$ **Question 7**A quarter  $\frac{1}{4}$ **Question 8** $1\frac{3}{5}$  butter

### **Activity 3**

#### **Question 1**

(a) cm; or m (b) cm; mm (c) km (d) m; cm (e) mm

#### **Question 2**

(a) Divide by 100 (b) Divide by 10 (c) Divide by 1 000 (d) 500 cm (e) 60 mm

(f) 9 000 mm

#### **Question 3**

(a)  $10\text{ cm} = 100\text{ mm}$  (b)  $300\text{ mm} = 30\text{ cm}$  (c)  $100\text{ cm} = 1\,000\text{ mm}$  (d)  $20\text{ mm} = 2\text{ cm}$  (e)  $180\text{ cm} = 1\,800\text{ mm}$  (f)  $600\text{ mm} = 60\text{ cm}$

#### **Question 4**

|           |        |       |       |       |       |        |
|-----------|--------|-------|-------|-------|-------|--------|
| <b>mm</b> | 4 000  | 8 000 | 6 000 | 2 000 | 9 000 | 1 000  |
| <b>cm</b> | 400    | 800   | 600   | 200   | 900   | 100    |
| <b>m</b>  | 4      | 8     | 6     | 2     | 9     | 1      |
| <b>mm</b> | 12 000 | 3 000 | 5 000 | 6 000 | 9 000 | 75 000 |
| <b>cm</b> | 1 200  | 300   | 500   | 600   | 900   | 7 500  |
| <b>m</b>  | 12     | 3     | 5     | 6     | 9     | 75     |

#### **Question 5**

(a) 184 km and 3 m

(b) 39 km and 501 m

#### **Question 6**

(a) Snail covers  $746\text{ cm} = 7\text{ m}$  and  $46\text{ cm}$  Sparrow covers  $746\text{ cm} \times 5 = 3\,730\text{ cm} = 37\text{ m}$  and  $30\text{ cm}$  Hen covers  $3\,730\text{ cm} \times 2 = 7\,460\text{ cm} = 74\text{ m}$  and  $60\text{ cm}$  Scottish Terrier covers  $746\text{ cm} \times 36 = 26\,856\text{ cm} = 268\text{ m}$  and  $56\text{ cm}$

(b) 7 m and 46 cm; 37 m and 30 cm; 74 m and 60 cm; 268 m and 56 cm

(c) 7 460 mm

## Activity 4

### Question 1

| ×  | 2   | 4   | 8   | 3   | 6   | 5   | 10  | 9   | 7   |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 10 | 20  | 40  | 80  | 30  | 60  | 50  | 100 | 90  | 70  |
| 50 | 100 | 200 | 400 | 150 | 300 | 250 | 500 | 450 | 350 |
| 90 | 180 | 360 | 720 | 270 | 540 | 450 | 900 | 810 | 630 |
| 80 | 160 | 320 | 640 | 240 | 480 | 400 | 800 | 720 | 560 |
| 40 | 80  | 160 | 320 | 120 | 240 | 200 | 400 | 360 | 280 |
| 20 | 40  | 80  | 160 | 60  | 120 | 100 | 200 | 180 | 140 |
| 30 | 60  | 120 | 240 | 90  | 180 | 150 | 300 | 270 | 210 |
| 60 | 120 | 240 | 480 | 180 | 360 | 300 | 600 | 540 | 420 |
| 70 | 140 | 280 | 560 | 210 | 420 | 350 | 700 | 630 | 490 |

### Question 2

(a) 3 941    (b) 2 268    (c) 3 258    (d) 4 984

### Question 3

1 666 rooms

### Question 4

1 248 guests

### Question 5

(a) 29 184    (b) 20 992    (c) 15 708    (d) 23 464

## Activity 5

### Question 1

(a) Length 5: 5 black triangles at the bottom and 5 at the top, and 6 + 6 blue triangles.

(b) 

(c) 22



### Question 2

|                        |   |    |    |    |    |    |    |     |
|------------------------|---|----|----|----|----|----|----|-----|
| Length                 | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 60  |
| No. of black triangles | 2 | 4  | 6  | 8  | 10 | 12 | 14 | 120 |
| No. of blue triangles  | 4 | 6  | 8  | 10 | 12 | 14 | 16 | 122 |
| Total no. of triangles | 6 | 10 | 14 | 18 | 22 | 26 | 30 | 242 |

### Question 3

1, 2, 3, 4, 20 -  $\times 4 - + 2 - 6, 10, 14, 18, 82$

### Question 4

|                     |    |    |    |    |    |    |     |
|---------------------|----|----|----|----|----|----|-----|
| Size                | 1  | 2  | 3  | 4  | 5  | 6  | 30  |
| No. of purple tiles | 2  | 4  | 6  | 8  | 10 | 12 | 60  |
| No. of white tiles  | 10 | 14 | 18 | 22 | 26 | 30 | 126 |
| Total no. of tiles  | 12 | 18 | 24 | 30 | 36 | 42 | 186 |

## GRADE 6

### Activity 1

#### Question 1

|         |         |         |           |
|---------|---------|---------|-----------|
|         | +8      | +45     | +1000     |
| 6       | 14      | 59      | 1059      |
| 6700    | 6708    | 6753    | 7753      |
| 999 847 | 999 855 | 999 900 | 1 000 900 |

|           |           |           |           |
|-----------|-----------|-----------|-----------|
|           | -30       | -52       | -100      |
| 1 242 508 | 1 242 478 | 1 242 426 | 1 242 326 |
| 678 760   | 678 730   | 678 678   | 678 578   |
| 245       | 215       | 163       | 63        |

|     |     |      |        |
|-----|-----|------|--------|
|     | X4  | X2   | X10    |
| 3   | 12  | 24   | 240    |
| 10  | 40  | 80   | 800    |
| 152 | 608 | 1216 | 12 160 |

### Question 2

4, 6, 18, 300, 2009, 8976, 34456, 56734

### Question 3

980345, 6753, 568, 90, 45, 34, 8, 7

**Question 4**

1.  $417\ 340 \rightarrow 471\ 345 \rightarrow 417\ 350$

2.  $3 \rightarrow 6 \rightarrow 9 \rightarrow 12 \rightarrow 15 \rightarrow 18$

3.  $20 \rightarrow 25 \rightarrow 30 \rightarrow 35 \rightarrow 40$

4.  $9 \rightarrow 99 \rightarrow 999 \rightarrow 9999$

**Question 5**

1.  $< 3$

2.  $78 < 90$

3.  $56 < 65$

4.  $110 > 101$

**Activity 2****Question 1**

$$56 \div 10 = 5,6$$

$$234 \div 1000 = 0,234$$

**Question 2**

$$0,2 \times 10 = 2$$

$$0,02 \times 1000 = 20$$

$$0,002 \times 100\ 000 = 200$$

**Question 3**

a)  $12 \div (4+2) \times 5 = 0,4$

b)  $(23 - 7) \times (8 - 4) = 64$

c)  $(88 \div 4) - (88 \div 11) = 14$

**Question 4**

$$3 \times 9 = 27 = 9 \times 3$$

$$5 \times 6 = 30 = 6 \times 5$$

$$7 \times 4 = 28 = 4 \times 7$$

$$11 \times 2 = 22 = 2 \times 11$$

$$10 \times 12 = 120 = 12 \times 10$$

### Question 5

|       | X 10  | X100   | X1000  |
|-------|-------|--------|--------|
| 6     | 60    | 600    | 6000   |
| 65    | 650   | 6 500  | 65 000 |
| 342   | 3 420 | 34 200 | 342000 |
| 0,2   | 2     | 20     | 200    |
| 1,45  | 14,5  | 145    | 1450   |
| 0,035 | 0,35  | 35     | 350    |

### Activity 3

#### Question 1

2, 3, 4, 5, 7, 11, 12, 13, 15, 17, 18, 19, 21, 22, 23, 26, 27, 29, 30, 31, 35, 37, 39, 41, 42, 43, 45, 47, 52, 53, 56, 59, 61, 63, 67, 71, 72, 73, 75, 79, 80, 83, 86, 87, 89, 90, 93, 96, 97

#### Question 2

40 marbles

#### Question 3

3 apples, R 9

#### Question 4

10 times

#### Question 5

|           |           |
|-----------|-----------|
| 666 753   | 56 909    |
| + 65 432  | + 99 679  |
| = 732 185 | = 156 588 |

|   |   |
|---|---|
| $\begin{array}{r} 267\ 564 \\ - 56\ 567 \\ \hline = 210\ 997 \end{array}$ | $\begin{array}{r} 199\ 349 \\ - 34\ 332 \\ \hline = 165\ 017 \end{array}$ |
|---|---|

#### **Activity 4**

##### **Question 1**

$$\frac{3}{4} + \frac{2}{4} = \frac{5}{4} \text{ or } 1 \frac{1}{4}$$

$$\frac{8}{2} + \frac{3}{2} = \frac{11}{2} \text{ or } 5 \frac{1}{2}$$

$$\frac{7}{8} - \frac{1}{8} = \frac{6}{8}$$

$$\frac{32}{6} - \frac{16}{6} = \frac{16}{6} \text{ or } 2 \frac{4}{6}$$

##### **Question 2**

$\frac{1}{2}$  as a percentage

= 50%

67 as a percentage

= 67%

##### **Question 3**

$\frac{1}{5}$  of the sweet

#### **Activity 5**

##### **Question 1**

1 hour and 30 minutes

##### **Question 2**

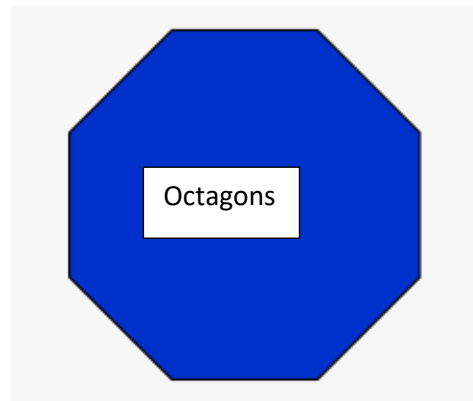
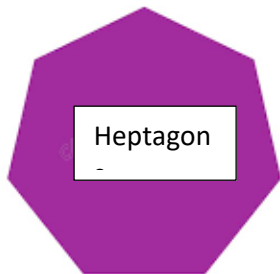
#### **Squares**

8

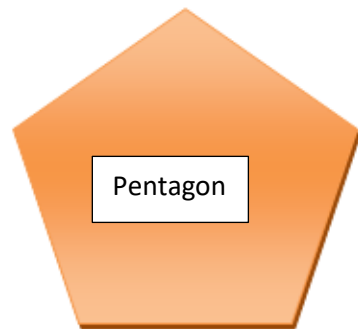
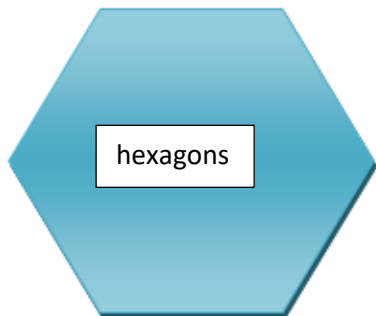
## Rectangles



**Parallelograms**



|

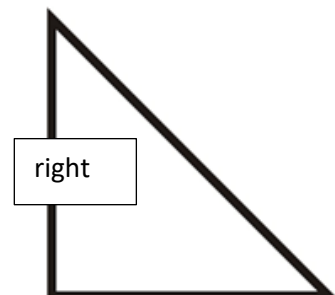
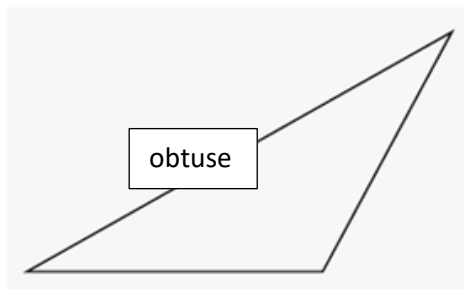
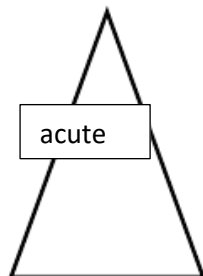


**Triangles**

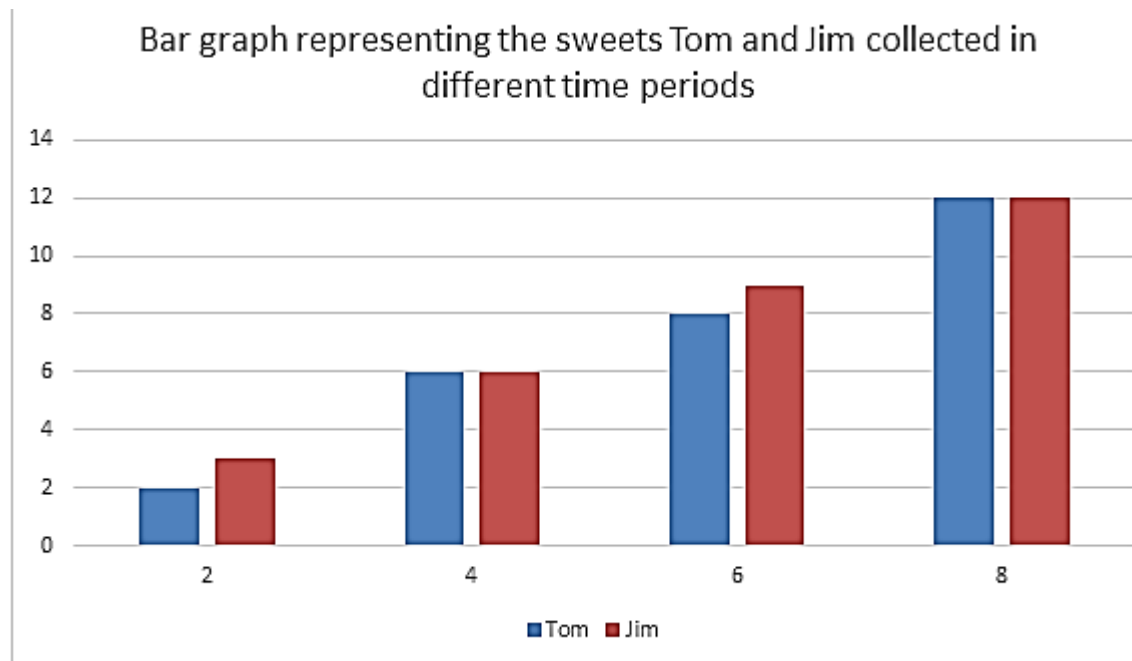
**What size is the angle below?**

Right angle triangle (90 degrees)

**Match the name of the triangle with the correct one:**



### Question 3



### Question 4

Answer should be 1708

$$\begin{array}{r} 1708 \\ 4 \overline{) 6832} \\ \underline{-4} \phantom{0} \phantom{0} \phantom{0} \\ 28 \phantom{0} \phantom{0} \\ \underline{-28} \phantom{0} \phantom{0} \\ 03 \phantom{0} \\ \underline{-0} \phantom{0} \\ 32 \\ \underline{-32} \\ 0 \end{array}$$

### Question 5

Build up:

$$400 + 60 + 7 = 467$$

$$5000 + 600 + 8 = 5\ 608$$

$$200\ 000 + 50 + 2 = 200\ 052$$

Break down:

$$7590 = 7000 + 500 + 90$$

$$409\ 673 = 400\ 000 + 9\ 000 + 600 + 70 + 3$$

$$692 = 600 + 90 + 2$$

### Question 6

1.  $2,34 = 2$

2.  $5,6 = 6$

3.  $7,7 = 8$

4.  $1,29 = 1$

### Question 7

Using addition and subtraction as inverse operations

$$100 - 1 = 99$$

$$67 + 33 = 100$$

$$6\ 456 - 453 = 6003$$

Using multiplication and division as inverse operations

$$3 \times 2 = 6$$

$$88 \div 8 = 11$$

$$9 \times 8 = 72$$

$$4 \times 6 = 24$$



# GRADE 7

## Activity 1

### Question 1

1. a) >  
b) <  
c) >  
d) >  
e) >  
f) <

2. smaller

### Question 2

- a) <  
b) =  
c) >  
d) =  
e) =  
f) >

### Question 3

a)  $\frac{1}{2}$   $\frac{2}{3}$   $\frac{5}{6}$

b)  $\frac{7}{4}$   $2\frac{2}{3}$   $2\frac{5}{6}$

c)  $2\frac{3}{5}$   $\frac{28}{10}$   $2\frac{9}{10}$

d)  $\frac{29}{14}$   $\frac{15}{7}$   $3\frac{6}{7}$

e)  $\frac{3}{5}$   $\frac{3}{4}$   $\frac{3}{2}$

### Question 4

a)  $\frac{3}{4}$

b)  $\frac{2}{5}$

c)  $\frac{1}{4}$

d)  $1\frac{1}{3}$

e)  $1\frac{3}{4}$

f)  $\frac{3}{4}$

g)  $\frac{4}{5}$

h)  $\frac{1}{4}$

i)  $\frac{1}{3}$

j)  $\frac{13}{25}$

k) 5

l) 5

### Question 5

$$\begin{aligned} \text{a) } & 1\frac{3}{4} \times 1\frac{1}{7} \\ &= \frac{7}{4} \times \frac{8}{7} \\ &= \frac{1}{1} \times \frac{2}{1} \\ &= 2 \end{aligned}$$

$$\begin{aligned} \text{b) } & 1\frac{3}{9} \times \frac{3}{8} \\ &= \frac{12}{9} \times \frac{3}{8} \\ &= \frac{4}{3} \times \frac{3}{8} \\ &= \frac{1}{1} \times \frac{1}{2} \\ &= \frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{c) } & \frac{2}{7} \div 1\frac{2}{12} \\ &= \frac{2}{7} \times \frac{12}{14} \\ &= \frac{1}{7} \times \frac{12}{7} \\ &= \frac{12}{49} \end{aligned}$$

### Question 6

a) 3

b) 4

### Activity 2

#### Question 1

a) 593 489, 593 488, 593 487, 593 486, 593 485

b) 289 542, 289 541, 289 540, 289 539, 289 538

c) 903 679, 903 678, 903 677, 903 676, 903 675

**Question 2**

1.  $\approx$

**Question 3**

a) 10

b) 60

c) 320

d) 450

a) 0

b) 100

c) 900

d) 1800

a) 0

b) 2000

c) 14 000

d) 73 000

**Question 4**

$$\begin{array}{r} \text{a) } 278\,467 \\ + 197\,539 \\ \hline 476\,006 \end{array}$$

$$\begin{array}{r} \text{b) } 87\,382 \\ + 12\,213 \\ \hline 99\,595 \end{array}$$

$$\begin{array}{r} \text{c) } 476\,006 \\ - 197\,539 \\ \hline 278\,467 \end{array}$$

$$\begin{array}{r}
 \text{d) } 68763 \\
 - 29552 \\
 \hline
 39211
 \end{array}$$

### Question 5

- a) 2= 2, 4, 6, 8, 10, 12      common multiples= 6, 12  
     6= 6, 12, 18, 24, 30, 36
- b) 4= 4, 8, 12, 16, 20, 24      common multiple= 12, 24  
     12= 12, 24, 36, 48, 60, 72
- c) 3= 3, 6, 9, 12, 15, 18      common multiple= 9, 18  
     9= 9, 18, 27, 36, 45, 54

### Question 6

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

### Question 7

- a)  $83 = 53 + 23 + 7$   
 b)  $53 = 29 + 5 + 19$   
 c)  $99 = 71 + 17 + 11$

### Activity 3

#### Question 1

- a)  $549\,327 = 500\,000 + 40\,000 + 9\,000 + 300 + 20 + 7$   
 b)  $77\,666 = 70\,000 + 7\,000 + 600 + 60 + 6$   
 c)  $154\,798\,105 = 100\,000\,000 + 50\,000\,000 + 4\,000\,000 + 700\,000 + 90\,000 + 8\,000 + 100 + 0 + 5$

**Question 2**

- d) 0,5
- e) 0,04

**Question 3**

- f)  $0,04 + 0,002$
- g)  $90 + 8 + 0,3 + 0,04 + 0,002$
- h)  $300 + 20 + 1 + 0,9 + 0,08 + 0,007$

**Question 4**

- a)  $25c / 0,25$
- b)  $50c / 0,5$
- c)  $25c / \frac{1}{4}$

**Question 5**

- a) 0
- b) 76 435
- c) 499 999

**Question 6**

- a) 9; 9
- b) 108; 75
- c) 12, 12

**Question 7**

a)  $6 - 3 + 7$   
 $2 + 7$   
 $= 10$

b)  $35 \div 5 + (18 - 16)$   
 $3 + 7$   
 $= 9$

c)  $(40 \div 5) \times 2$   
 $8 \times 2$   
 $= 16$

#### **Activity 4**

##### **Question 1**

a) Area of a triangle =  $l \times b$

$$5\text{cm} \times 10\text{cm}$$

\_\_\_\_\_

$$50\text{cm}$$

b) Area of a rectangle =  $l \times b$

$$18\text{mm} \times 8\text{mm}$$

\_\_\_\_\_

$$144\text{mm}$$

##### **Question 2**

a)  $1\text{cm} = 10\text{mm}$

b)  $1\text{m} = 100\text{cm}$

c)  $1\text{km} = 1000\text{m}$

##### **Question 3**

a)  $1\text{l} = 1000\text{ml}$

b)  $1\text{kl} = 1000\text{l}$

##### **Question 4**

a)  $4 + 9 = 9 + 4$

b)  $18 \times 11 = 11 \times 18$

c)  $35 + 100 = 100 + 35$

d)  $27 \times 54 = 54 \times 27$

##### **Question 5**

a)  $(7 + 3) + 1 = 7 + (3 + 1) = 11$

b)  $11 \times (3 \times 2) = (11 \times 3) \times 2 = 66$

### Question 6

a)  $5 : 7 = \frac{5}{10} : \frac{7}{10}$

b)  $1 : 2 = \frac{1}{5} : \frac{2}{5}$

c)  $6 : 8 = \frac{6}{2} : \frac{8}{2}$

### Activity 5

#### Question 1

a) 0,34; 0,35

b) 0,4; 0,5

c) 0,124; 0,125

#### Question 2

a) 0, 42

b) 0, 0008

c) 0, 005

#### Question 3

a) 3= 3, 6, 9, 12, 15, 18, 21, 24  
4= 4, 8, 12, 16, 20, 24, 28, 32  
LCM= 12

b) 5= 5, 10, 15, 20, 25, 30, 35, 40  
6= 6, 12, 18, 24, 30, 36, 42, 48  
LCM= 30

c) 8= 8, 16, 24, 32, 40, 48, 56, 64  
10= 10, 20, 30, 40, 50, 60, 70, 80  
LCM= 40

#### Question 4

a) 1 000 000

b) 200 000

c) 600 000

**Question 5**

- a) <
- b) >
- c) <
- d) >

**Question 6**

- a) 10
- b) 470
- c) 820
- d) 3460

**GRADE 8****Activity1****Question 1**

- a)  $F_{20} = \{1; 2; 4; 5; 10; 20\}$
- b)  $F_{28} = \{1; 2; 4; 7; 14; 28\}$
- c)  $F_{36} = \{1; 2; 3; 4; 6; 9; 12; 18; 36\}$
- d)  $M_{11} = \{11; 22; 33; 44...\}$
- e)  $M_{36} = \{36; 72; 108; 144...\}$
- f)  $M_3 = \{3; 6; 9; 12...\}$

**Question 2**

- a) 2; 3; 7
- b) 3

**Question 3**

- a) 14; 21 and 35
  - $14 = 2 \times 7$
  - $21 = 3 \times 7$
  - $35 = 5 \times 7$
  - HCF = 7
- b) 38; 57 and 95
  - $38 = 2 \times 19$
  - $57 = 3 \times 19$
  - $95 = 5 \times 19$



$$\text{HCF} = 19$$

c) 360 and 600

$$360 = 2 \times 2 \times 2 \times 3 \times 3 \times 5$$

$$600 = 2 \times 2 \times 2 \times 3 \times 5 \times 5$$

$$\text{HCF} = 2 \times 2 \times 2 \times 3 \times 5$$

$$= 2^3 \times 3 \times 5$$

$$= 120$$

#### **Question 4**

a) 6; 12 and 18

$$6 = 2 \times 3$$

$$12 = 2 \times 2 \times 3$$

$$18 = 2 \times 3 \times 3$$

$$\text{LCM} = 2 \times 3 \times 2 \times 3$$

$$\text{LCM} = 2^2 \times 3^2$$

$$\text{LCM} = 36$$

b) 2; 6 and 11

$$2 = 2$$

$$6 = 2 \times 3$$

$$11 = 11$$

$$\text{LCM} = 2 \times 2 \times 3 \times 11$$

$$\text{LCM} = 2^2 \times 3 \times 11$$

$$\text{LCM} = 132$$

#### **Activity 2**

##### **Question 1**

$$\text{a) } \sqrt[3]{(13 - 9) \times (-10 \div -5)}$$

$$= \sqrt[3]{(4 \times 2)}$$

$$= 2$$

$$\text{b) } 3^3 - (-2)^2 + (-1)^7$$

$$= 27 - 4 - 1$$

$$= 22$$

$$\text{c) } \frac{5 - (-3) + 2^2}{2(-3)}$$

$$= \frac{12}{-6}$$

$$= -2$$

### **Activity 3**

#### **Question 1**

a) -3; -7; -11; ...

-15; -19; -23

b) 1; 1; 2; 3; 5; 8; ...

13; 21; 34

c) 1; 4; 9; 16; 25; ...

36; 49; 64

#### **Question 2**

$$1 + 20 = 21$$

$$2 + 19 = 21$$

$$3 + 18 = 21$$

$$4 + 17 = 21$$

$$5 + 16 = 21$$

$$6 + 15 = 21$$

$$7 + 14 = 21$$

$$8 + 13 = 21$$

$$9 + 12 = 21$$

$$10 + 11 = 21$$

## Activity 4

### Question 1

|    |  |
|----|--|
| a) | $\begin{aligned} & \frac{(m^2n^3)^3}{m^4n^4} \\ &= \frac{m^6n^9}{m^4n^4} \\ &= m^2n^5 \end{aligned}$   |
| b) | $\begin{aligned} & (3c^5d^3)^4 \\ &= 3^4c^{20}d^{12} \\ &= 81c^{20}d^{12} \end{aligned}$   |
| c) | $\begin{aligned} & (-4x^{-3})^0 \times (-4x^3)^2 \\ &= 16x^6 \end{aligned}$  |
| d) | $\begin{aligned} & \sqrt{64m^{64}} \\ &= (64m^{64})^{\frac{1}{2}} \\ &= 8m^{32} \end{aligned}$   |
| f) | $\begin{aligned} & 3x + 5x \\ &= 8x \end{aligned}$   |
| g) | $\begin{aligned} & 3x^2 + 5x + 2x^2 - 6 - 5x - 7 \\ &= 5x^2 - 13 \end{aligned}$  |
| h) | $\begin{aligned} & \frac{4k^2-8k}{2k} + 5k^2 - 1 \\ &= \frac{4k(k-2)}{2k} + 5k^2 - 1 \\ &= 2(k-2) + 5k^2 - 1 \\ &= 2k - 4 + 5k^2 - 1 \\ &= 5k^2 + 2k - 5 \end{aligned}$            |
| i) | $\begin{aligned} & x^{2+5} \cdot x^{3-4} \cdot 2y^0 \\ &= 2x^{2+5+3-4} \\ &= 2x^6 \end{aligned}$   |
| j) | $\begin{aligned} & 2\frac{4}{5} \div 4\frac{1}{5} \\ &= \frac{14}{5} \div \frac{21}{5} \\ &= \frac{14}{5} \times \frac{5}{21} \\ &= \frac{14}{21} \\ &= \frac{2}{3} \end{aligned}$ |

|    |   |
|----|---|
| k) | $\frac{4b}{12a} \times \frac{24a}{8b}$ $= \frac{2}{2}$ $= 1$ <p style="text-align: center;">Or</p> $\frac{4b}{12a} \times \frac{24a}{8b}$ $= \frac{96ab}{96ab}$ $= 1$   |
| l) | $\frac{5^0 \times m^{12} \times n^4 \times n^{-2}}{m^5 \times m \times n^6}$ $= \frac{m^{12} \cdot n^{4-2}}{m^{5+1} \cdot n^6}$ $= \frac{m^{12} \cdot n^2}{m^6 \cdot n^6}$ $= m^6 n^{-4}$ $= \frac{m^6}{n^4}$ |
| m) | $\left(\frac{144r^4s^3t}{-24r^2t^5}\right)^2$ $= \frac{144^2 r^8 s^6 t^2}{(-24)^2 r^4 t^{10}}$ $= \frac{36r^4 s^6 t^{-8}}{t^8}$   |
| n) | $(y - 8)^2 - 7(y + 1) + (2 - 7)(2 + y)$ $= y^2 - 16y + 64 - 7y - 7 + 4 + 2y - 14 - 7y$ $= y^2 - 28y + 47$   |

## Question 2

- a) False
- b) True
- c) False

## Activity 5

### Question 1

- a. 70c to R1  
70 : 100  
7 : 10
- b. 2months to 2 years  
2 : 24  
1 : 12

- c. 4cm to 40mm  
40 : 40  
1 : 1

### Question 2

- a.  $60 \times \frac{1}{6} = 10$   
 $60 \times \frac{3}{6} = 30$   
 $60 \times \frac{2}{6} = 20$   
10 : 30 : 20

### Question 3

- a.  $= 1,84 \times 2,5$   
 $= R4,60$
- b.  $4 \times 60 \times 30 = 7200m$
- c.  $= 700 - 70$   
 $= 630c$   
 $\therefore = 630 \div 7$   
 $= 90c$
- d.  $\frac{34}{40} \times 100 = 85\%$   
 $\frac{25}{30} \times 100 = 83\%$

He did better in his mathematics

- e.  $100 - 10 - 15 = 75$   
 $740 \times 75\% = 555$

### Question 4

- a) CP = R110; profit = 12%; SP = ?  
SP = R110 + (R110 × 12%)  
SP = R123,20
- b) CP = R1000; %profit = ?; SP = R800  
R800 = R1000 - loss  
R800 - R1000 = loss  
-R200 = loss  
 $200/1000 \times 100 = 20\%$
- c) CP = R300, profit = 30%; SP = ?  
SP = R300 + (R300 × 30%)  
SP = R390

### Question 5

$$\begin{aligned} \text{a) } R100\ 000 &= x \times \frac{2}{6} \\ R100\ 000 \div \frac{2}{6} &= x \\ R300\ 000 &= x \end{aligned}$$

Or

$$\begin{aligned} R150\ 000 &= x \times \frac{3}{6} \\ R150\ 000 \div \frac{3}{6} &= x \\ R300\ 000 &= x \end{aligned}$$

$$\begin{aligned} \text{b) } R300\ 000 \times \frac{1}{6} \\ &= R50\ 000 \end{aligned}$$

$$\begin{aligned} \text{c) } &= \frac{150\ 000}{300\ 000} \times 100 \\ &= 50\% \end{aligned}$$

$$\begin{aligned} \text{d) } &= 300\ 000 \times 25\% \\ &= 75\ 000 \end{aligned}$$

$$\begin{aligned} 75\ 000 &= 50\ 000 \left(1 + \frac{10}{100}n\right) \\ \frac{75\ 000}{50\ 000} &= \left(1 + \frac{10}{100}n\right) \end{aligned}$$

$$\frac{3}{2} = \left(1 + \frac{10}{100}n\right)$$

$$\frac{3}{2} - 1 = \frac{10}{100}n$$

$$\frac{1}{2} = \frac{10}{100}n$$

$$\frac{1}{2} \div \frac{10}{100} = n$$

$$\frac{1}{2} \times \frac{100}{10} = n$$

$$5 = n$$

## GRADE 9

### Activity 1

#### Question 1

- a) -1
- b) 1
- c)  $144a^2b^2$

#### Question 2

(a)  $\frac{1}{2^3} = \frac{1}{8}$

(b)  $3^2 \times \frac{1}{3^2} = 1$

(c)  $(5)^{-2} = \frac{1}{5^2} = \frac{1}{25}$

(d)  $\frac{1}{3^2} \times \frac{1}{2^3} = \frac{1}{9} \times \frac{1}{8} = \frac{1}{72}$

(e)  $\frac{1}{2^3} + \frac{1}{3^3} = \frac{1}{8} + \frac{1}{27} = \frac{35}{216}$

(f)  $\frac{1}{10^3} = \frac{1}{1000}$

#### Question 3

- a)  $29a^2$
- b)  $-8m^4$
- c)  $\frac{-1}{2}$

#### Question 4

- (a)  $x = 5$
- (b)  $x = 4$
- (c)  $x = 5$
- (d)  $x = 3$
- (e)  $x = 4$

### Activity 1

#### Question 1

- (a) 1 2 4 8 16 32 64 128
- (b) 256 224 192 160 128 96 64 32
- (c) 256 128 64 32 16 8 4 2

#### Question 2

- a) The first term is 6. You then add 4 to each term to get the next term
- b) start with 2, then multiply each number by -2 to get the next term
- c) each term is the square of its position in the sequence

#### Question 3

- a) -4; -7; -10; ...; -19
- b)  $\frac{2}{3}; \frac{2}{9}; \frac{2}{27}; \dots; \frac{2}{2187}$

#### Question 4

#### Sample answer\*

(a) Sample answer: 3, 8, 13, 18, 23, 28, 33, 38, 43, 48 ...

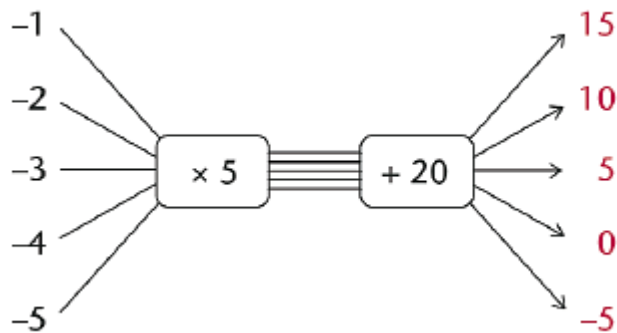
(b) See the answers on LB page 59 alongside.

|                    |   |    |    |    |    |    |    |    |
|--------------------|---|----|----|----|----|----|----|----|
| <b>Term number</b> | 1 | 2  | 3  | 4  | 5  | 6  | 7  | 8  |
| <b>Term value</b>  | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 |

(c) They both have gaps of five between consecutive terms.

#### Activity 3

#### Question 1



#### Question 2

|                 |    |    |    |    |    |
|-----------------|----|----|----|----|----|
| Input numbers   | -1 | -2 | -3 | -4 | -5 |
| Function values | 15 | 10 | 5  | 0  | -5 |

#### Question 3

- a)  $y = 3x$
- b)  $y = -3x - 2$
- c)  $y = -2x - 2$



## Activity 4

### Question 1

|     | $x$                         | -2  | -1 | 0  | 1  | 2 |
|-----|-----------------------------|-----|----|----|----|---|
| (a) | $3x + 2$                    | -4  | -1 | 2  | 5  | 8 |
| (b) | $2x - 3$                    | -7  | -5 | -3 | -1 | 1 |
| (c) | $3x + 2 + 2x - 3$           | -11 | -6 | -1 | 4  | 9 |
| (d) | $2x - 3 + 3x + 2$           | -11 | -6 | -1 | 4  | 9 |
| (e) | $5x - 1$                    | -11 | -6 | -1 | 4  | 9 |
| (f) | $(3x + 2)(2x - 3)$          | 28  | 5  | -6 | -5 | 8 |
| (g) | $3x(2x - 3) + 2(2x - 3)$    | 28  | 5  | -6 | -5 | 8 |
| (h) | $6x^2 - 5x - 6$             | 28  | 5  | -6 | -5 | 8 |
| (i) | $\frac{(3x+2)(2x-3)}{3x+2}$ | -7  | -5 | -3 | -1 | 1 |
| (j) | $\frac{6x^2-5x-6}{3x+2}$    | -7  | -5 | -3 | -1 | 1 |

### Question 2

| $x$       | 2  | 3  | 5  | 10  | -5  | -10 |
|-----------|----|----|----|-----|-----|-----|
| $10x + 3$ | 23 | 33 | 53 | 103 | -47 | -97 |

| $x$                      | 2  | 3  | 5  | 10  | -5  | -10 |
|--------------------------|----|----|----|-----|-----|-----|
| $12x - 7 + 3x + 10 - 5x$ | 23 | 33 | 53 | 103 | -47 | -97 |

### Question 3

- a)  $6x^2 - 11x - 10$
- b)  $4x^2 - 12x + 9$
- c)  $49x^2 - 1$

### Question 4

- a)  $5x^2 + 14x + 10$
- b)  $x^2 - 6x$

### Question 5

|               |     |    |     |   |
|---------------|-----|----|-----|---|
| $x$           | 10  | 2  | 5   | 1 |
| $5x^2 + 2x^2$ | 700 | 28 | 175 | 7 |
| $7x^2$        | 700 | 28 | 175 | 7 |
| $13x - 8x$    | 50  | 10 | 25  | 5 |
| $5x$          | 50  | 10 | 25  | 5 |

### Activity 5

#### Question 1

1. (a)  $5x = 21 - 2x$   
 $7x = 21$   
 $x = 3$

(c)  $-x = x - 6$   
 $-2x = -6$   
 $x = 3$

(b)  $2x = -13$   
 $x = -6\frac{1}{2}$

(d)  $12x + 6 = 0$   
 $12x = -6$   
 $x = -\frac{1}{2}$

#### Question 2

$$5x + 3 - x = 11$$
$$4x = 8$$
$$x = 2$$

#### Question 3

(a)  $3x - 6 = 4x + 4$   
 $-x - 6 = 4$   
 $-x = 10$   
 $x = -10$

(c)  $0,8x = -24$   
 $8x = -240$   
 $x = -30$

(e)  $2,5x = 0,5x + 5$   
 $2x = 5$   
 $x = 2,5$

(g)  $2x - 3 = 10$   
 $2x = 13$   
 $x = \frac{13}{2}$   
 $x = 6\frac{1}{2}$

(b)  $5x + 10 = -6 + 3x$   
 $2x + 10 = -6$   
 $2x = -16$   
 $x = -8$

(d) no solution  
impossibility

(f)  $7x - 14 = 14 - 7x$   
 $14x = 28$   
 $x = 2$

(h)  $2x - 9 - 3x = 5x + 9$   
 $-x - 9 = 5x + 9$   
 $-6x = 18$   
 $x = -3$

**Question 4**

$$X = -2$$

**Question 5**

3cm

# Studente betrokke

## **Beyond Education Program (Opstel van Aktiwiteite)**

Adams, Ghiaan; Adams, Nerisha; Amsterdam, Kaylin; Coleman, Jessica; Daggia, Saabirah; De Jongh, Ilke Tonya; De Wet, Amber; Du Toit, Melanie; Ehrlich, Chandré; Grobler, Jö; Hansen, Sarah; Harrison, Stephanie; Jansen, Jayson-Lee; Kriel, Karlien; Mahoney,Charnay; Matthee, Linmari; Meyer, Kalsy; Nkosi, Ntandonkosi; Ohlson, Jade; Regenstein, Madré; Richardson, Kirsty; Rowland, Emma; Stemmet, Charlise; Swart, Marianke; Thompson, Lizelle; Van Sitters, Erin; Van Wyk, Kayleigh; Visser, Fébé; White, Ali.

## **Onderwys Studente Komitee (Redigering):**

Adams, Marcel; Boulle, Kayla; Bromfield, Samantha; Davis, Casey; Erasmus, Kirsten; Landman, Lelanie; Norman, Jamie; Opperman, Celeste; San, Terri-Leigh; Van Zyl, Allené.

