# Stonelaw Mathematics Department

## Transition Block

| Transition Block | |
|---|---|
| BA0 | Whole Numbers. |
| BA1 | Angles, Triangles, Quadrilaterals and Symmetry. |
| BA2 & BA3 | Algebra |
| BA4 | Negative Numbers. |

BA0.1 I can read and write large numbers.

## Exercise 1 A

Write the following numbers out fully in words:

**1)**  27         **2)**  91         **3)**  79         **4)**  60

**5)**  19         **6)**  35         **7)**  843        **8)**  190

## Exercise 1 B

Write the following numbers out fully in words:

**1)**  427        **2)**  117        **3)**  648        **4)**  280

**5)**  109        **6)**  301        **7)**  1822       **8)**  6237

## Exercise 1 C

Write the following numbers out fully in words:

**1)**  9783       **2)**  12187      **3)** 61454       **4)**  23132

**5)**  250000     **6)** 3000000     **7)** 14000000    **8)**  6237863

## Exercise 2 A

Write the following using digits:

**1)**  Thirty five      **2)**  Seventy three   **3)**  Sixty four

**4)**  Ninety five      **5)**  Four hundred and forty

## Exercise 2 B

Write the following using digits:

**1)**  Six hundred and fifty seven     **2)** Nine hundred and eight

**3)**  Three thousand five hundred and twenty one

**4)**  Fourteen thousand six hundred and forty five

## Exercise 2 C

Write the following using digits:

**1)** Twenty two thousand eight hundred and ninety eight

**2)** Eight hundred thousand three hundred and twenty four

**3)** Five million      **4)** Ten million

**5)** One million one hundred and seven thousand

**6)** Twelve million five hundred thousand and two

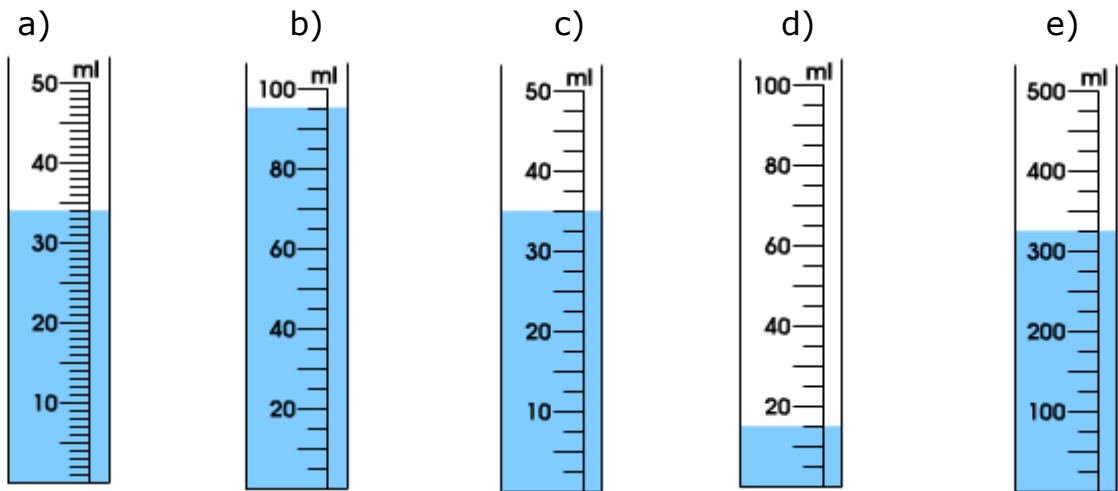BA0.2 I can read scales to the nearest graduation.

## Exercise 3 A

**1)** What numbers are located at positions a) to i) on theses number lines?
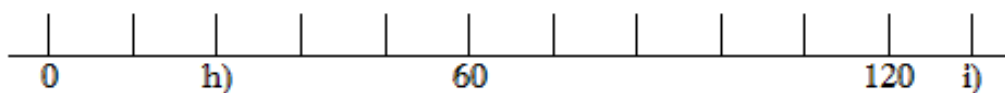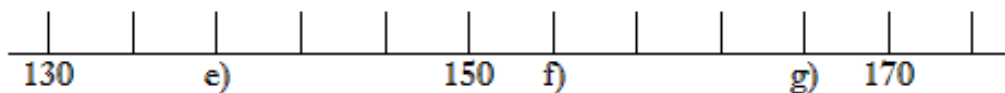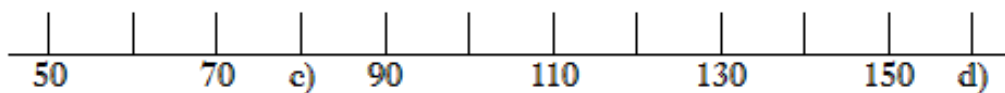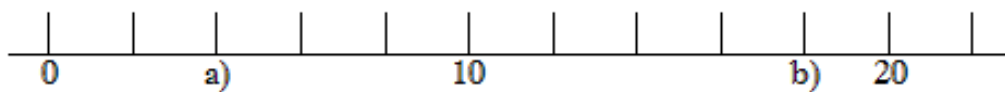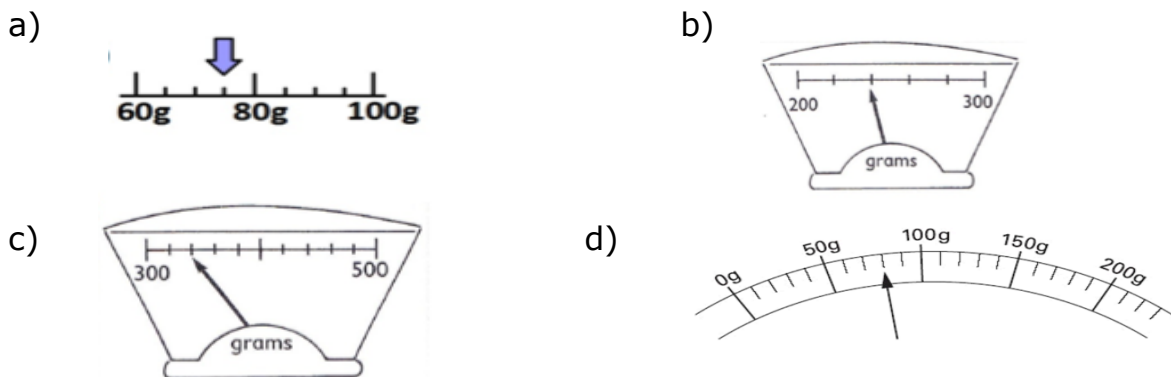
# Exercise 3 B

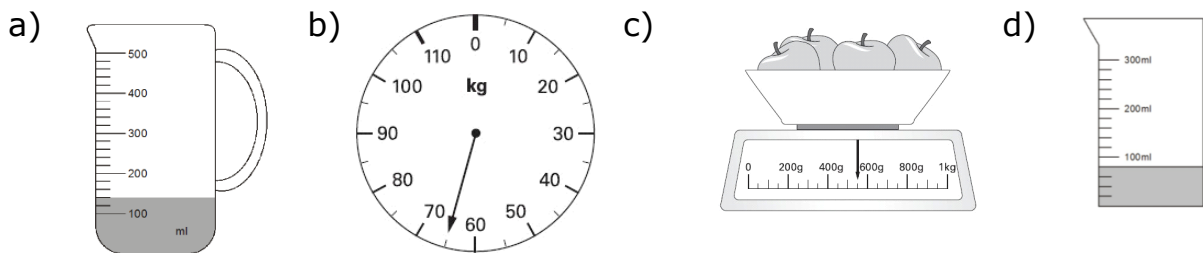1) State the *capacity* shown in *ml*, for each of the following:

a)        b)        c)        d)        e)

# Exercise 3 C

1) State and interpret the following scales, make sure you give the correct unit (litres/millilitres/grams/kilograms):

a)                                         b)

60g    80g    100g

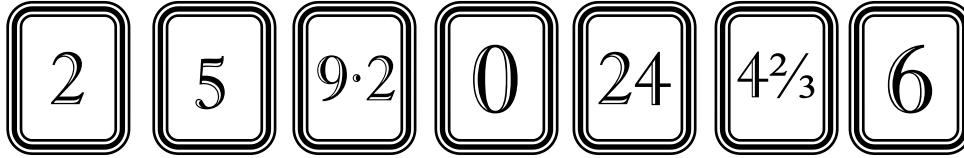c)                                         d)

300        500

grams

2) State and interpret the following scales, make sure you give the correct unit (litres/millilitres/grams/kilograms):

a)        b)        c)        d)

## Number Cards For Exercise 4

| 2 | 5 | 9·2 | 0 | 24 | 4⅔ | 6 |

# Exercise 4 A

Using the number cards write out:

**1)** Which two cards give a sum of 11?

**2)** Which two cards have a difference of 4?

**3)** Find the two cards with a product of 10.

**4)** Find two cards with a quotient of 3.

# Exercise 4 B

Using the number cards write out:

**1)** Which two cards give a sum of 30?

**2)** Which two cards have a difference of 18?

**3)** Find the three cards with a product of 60.

**4)** Find two cards with a quotient of 12.

# Exercise 4 C

Using the number cards write out:

**1)** Which three cards give a sum of 31?

**2)** Which two cards have a difference of 3·2?

**3)** Find the three cards with a product of 92.

**4)** Find two cards with a quotient of 4·6.

## Exercise 5 A

Work out the answers to each of the following:-

**1)** 72 + 36 **2)** 57 + 45 **3)** 123 + 178 **4)** 165 + 142

**5)** 44 - 21 **6)** 49 - 34 **7)** 41 - 19 **8)** 522 - 179

**9)** 358 + 219 **10)** 111 - 66 **11)** 4·2 + 3·6 **12)** 1·7 + 2·5

**13)** 13·8 + 1·7 **14)** 56·1 + 3·6 **15)** 7·8 - 2·3

**16)** Add 0·6 to 1·7 **17)** Find the sum of 3·2 and 4·1

**18)** Find the sum of 9·4 and 14·9 **19)** Evaluate 7·9 + 0·62 + 5

**20)** Find the difference of 5·9 and 3·4

**21)** Find the difference of 6·5 and 2·9

## Exercise 5 B

**1)**    1·14       **2)**    4·03       **3)**    6·14
     + 2·30              + 5·81              + 2·35
        .                    .                    .

**4)**    4·31       **5)**    2·25       **6)**    7·36
     + 4·58              + 3·46              + 1·37

**7)**    29·56      **8)**    75·59      **9)**    68·88
     − 3·16              − 23·28             − 2·06
        .                    .                    .

**10)**   82·73      **11)**   55·79      **12)**   82·38
     − 0·22              − 23·01             − 0·11
        .                    .                    .

**13)** 13·8 + 1·7 **14)** 56·1 + 3·46 **15)** 17·1 + 2·83

**16)** 1·7 + 2·57 **17)** 12·6 + 1·47 **18)** 14 + 0·29

**19)** 15·6 − 14·7 **20)** 26·9 − 12·4 **21)** 17·28 − 10·43

**22)** 56·48 − 25·29 **23)** 82·04 − 63·48 **24)** 92·16 − 25·31

## Exercise 5 C

1) Two tables are placed together to form a larger one. The first table is 67·4cm long and the second table is 56·8cm long. What is the total length?

2) Two boxes weigh 4·6kg and 18·02kg. What is the total weight?

3) What length of shelf is needed to hold books with thicknesses of 3·7cm and 4·4cm?

4) John weighs 45·2kg and Allan weighs 40kg. What is the sum of their weights?

5) Pat weighs 42·2kg and Gerry weighs 35·5kg. What is the difference of their weights?

5) Three boxes are placed end to end. The first box is 21·4cm long, the second box is 58·1cm long and the third box is 33·6cm long. What is the total length?

6) Three calculators weigh 3·6g, 3·9g and 1·8g. What is their total weight?

7) What length of shelf is needed to hold books with thicknesses of 6·3cm, 7·4cm, 1·8cm, 2·8cm and 4·9cm?

8) Jack has five pens all weighing 1·8g each.  What is the total weight of all these pens?

BA0.6 I can multiply and divide by a single digit without a calculator

Calculate (without a calculator):

## Exercise 6 A

1) 31 × 2    2) 42 × 7    3) 58 × 8    4) 4 × 50

5) 49 × 3    6) 123 × 9    7) 87 × 5    8) 7 × 47

## Exercise 6 B

**1)** 39 × 9    **2)** 245 × 8    **3)** 228 × 7    **4)** 4 × 76

**5)** 439 × 6    **6)** 676 × 4    **7)** 327 × 5    **8)** 9 × 443

## Exercise 6 C

**1)** 4·3 × 8    **2)** 7·5 × 7    **3)** 9·8 × 3    **4)** 4 × 3·6

**5)** 12·5 × 3    **6)** 16·4 × 5    **7)** 92·7 × 9    **8)** 6 × 76·1

## Exercise 7 A

**1)** 30 ÷ 2    **2)** 44 ÷ 4    **3)** 96 ÷ 6    **4)** 85 ÷ 5

**5)** 93 ÷ 3    **6)** 88 ÷ 8    **7)** 128 ÷ 4    **8)** 625 ÷ 5

## Exercise 7 B

**1)** 130 ÷ 5    **2)** 216 ÷ 4    **3)** 236 ÷ 8    **4)** 837 ÷ 9

**5)** 232 ÷ 8    **6)** 624 ÷ 3    **7)** 2448 ÷ 8    **8)** 3598 ÷ 7

## Exercise 7 C

**1)** 2136 ÷ 6    **2)** 5425 ÷ 7    **3)** 12·5 ÷ 5    **4)** 42·3 ÷ 9

**5)** 22·4 ÷ 8    **6)** 342·3 ÷ 3    **7)** 642·36 ÷ 8 **8)** 585·9 ÷ 9

## Exercise 8 A

Calculate (without a calculator):

**1)** 35 × 10 **2)** 42 × 100 **3)** 54 × 20 **4)** 47 × 50

**5)** 49 × 30 **6)** 83 × 90 **7)** 57 × 100 **8)** 75 × 200

## Exercise 8 B

**1)** 38 × 100 **2)** 24 × 200 **3)** 48 × 700 **4)** 32 × 600

**5)** 49 × 1000 **6)** 67 × 4000 **7)** 27 × 5000 **8)** 99 × 2000

## Exercise 8 C

**1)** 7·2 × 80 **2)** 3·5 × 70 **3)** 19·8 × 30 **4)** 22·6 × 40

**5)** 5·5 × 300 **6)** 46·7 × 500 **7)** 2·7 × 9000 **8)** 14·9 × 7000

## Exercise 9 A

**1)** 350 ÷ 10 **2)** 2100 ÷ 100 **3)** 540 ÷ 20 **4)** 950 ÷ 50

**5)** 309 ÷ 30 **6)** 810 ÷ 90 **7)** 575 ÷ 50 **8)** 780 ÷ 60

## Exercise 9 B

**1)** 3800 ÷ 100 **2)** 2400 ÷ 200 **3)** 4800 ÷ 600 **4)** 3200 ÷ 400

**5)** 4900 ÷ 700 **6)** 64000 ÷ 4000 **7)** 27000 ÷ 3000

# Exercise 9 C

**1)** 56 ÷ 10       **2)** 24 ÷ 20       **3)** 660 ÷ 600     **4)** 32·8 ÷ 40

**5)** 42·6 ÷ 60      **6)** 1·6 ÷ 400     **7)** 27·63 ÷ 900
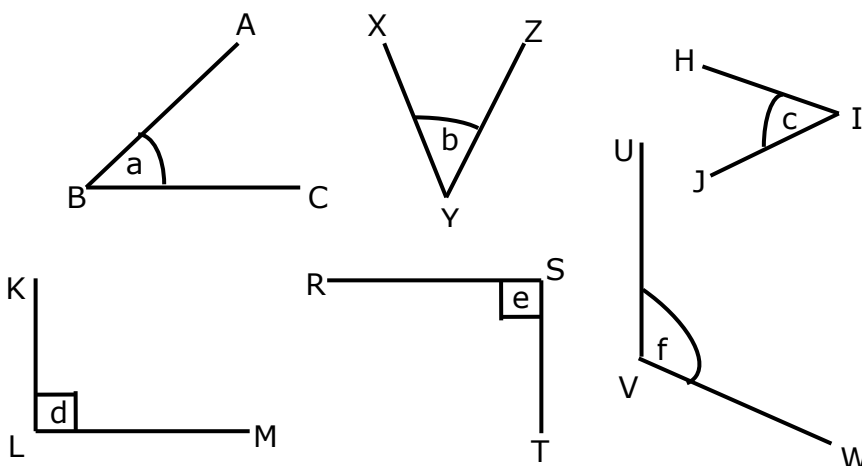
# BA1       Angles, Triangles and Quadrilaterals

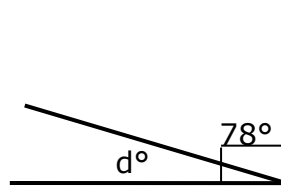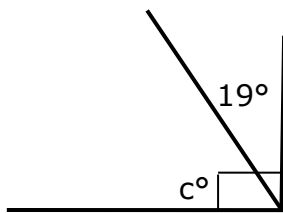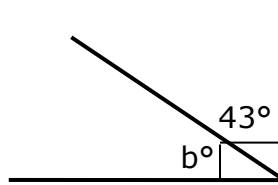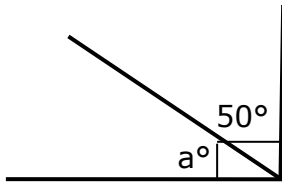| BA1.1 | I can use and understand the terms Acute Angle, Right Angle, Obtuse Angle, Straight Angle and Reflex Angle |
|---|---|

# Exercise 10 A

1 Copy the following table into your jotter and fill in missing answers:-

|  | Type of Angle | Name of Angle |
|---|---|---|
| a) | Acute | $\angle ABC$ |
| b) |  |  |
| c) |  |  |
| d) |  |  |
| e) |  |  |
| f) |  |  |

## Exercise 10 B

**1)** Find the size of the missing angles a to d

50°
a°

43°
b°

19°
c°

78°
d°

**2)** Find the size of the missing angles a to e

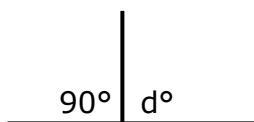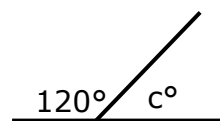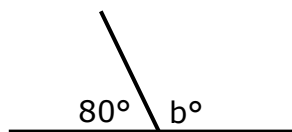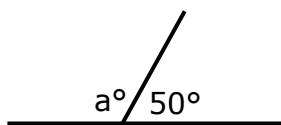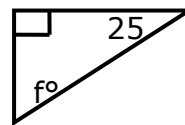a° 50°

80° b°

120° c°

90° d°

70° e°
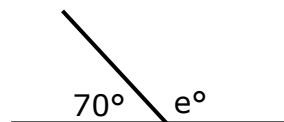
## Exercise 10 C

**1)** Find the size of the missing angles a to f
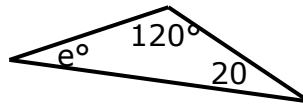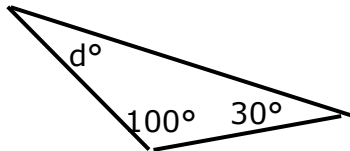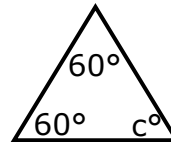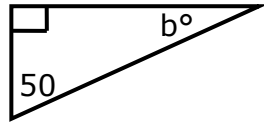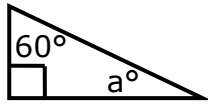


## BA2 and BA3   Substitutions, Equations and Brackets

| BA2.1     I can use algebraic shorthand and gather like terms. |
| --- |

## Exercise 11 A

Write the following in Algebraic shorthand

**1)**  $3 \times y$        **2)**  $4 \times t$        **3)**  $9 \times v$        **4)**  $7 \times r$

**5)**  $10 \times s$      **6)**  $13 \times h$      **7)**  $27 \times p$      **8)**  $75 \times g$

## Exercise 11 B

Write the following in Algebraic shorthand

**1)**  $3 \times y \times t$          **2)**  $4 \times t \times v$      **3)**  $9 \times v \times r$

**4)**  $5 \times u \times v$          **5)**  $22 \times r \times f$    **6)**  $2 \times 3 \times p \times q$

## Exercise 11 C

Write the following in Algebraic shorthand

**1)** $3 \times \mathbf{y} + 9 \times \mathbf{v}$    **2)** $4 \times \mathbf{t} + 3 \times \mathbf{b}$    **3)** $10 \times \mathbf{a} - 4 \times \mathbf{k}$

**4)** $6 \times \mathbf{r} - 10 \times \mathbf{c}$    **5)** $11 \times \mathbf{g} + 22 \times \mathbf{u}$    **6)** $33 \times \mathbf{e} + 5 \times \mathbf{n}$

## Exercise 12 A

Simplify the following

**1)** $2a + 3a$    **2)** $3b + 5b$    **3)** $4g + 7g$    **4)** $9m + 2m$

**5)** $7p + 7p$    **6)** $6c + c$    **7)** $4q - 2q$    **8)** $10z - 7z$

## Exercise 12 B

Simplify the following

**1)** $3a + 4a + 5a$    **2)** $4b + 3b + 2b$    **3)** $5c + 2c + c$

**4)** $d + 3d + 7d$    **5)** $6e + 3e - 7e$    **6)** $3f + 8f - 9f$

**7)** $4x + 5x - 7x$    **8)** $8y - 3y - y$    **9)** $7z + 8z - 9z - 5z$

## Exercise 12 C

Simplify the following

**1)** $2a + 4b + 5a + 2b$   **2)** $6x + 3y + 3x + 4y$   **3)** $8m + 6n - 2m + 3n$

**4)** $8a + 3b + a - b$    **5)** $5x + 4y - 2x - y$    **6)** $6p + q - 5p + 2q$

## Exercise 13 A

Calculate

**1)**  3 x 5 + 4    **2)**    3 + 5 x 4    **3)**    2 + 7 x 3

**4)**  15 x 2 - 3   **5)**    4 + 3 x 2    **6)**    3 x 4 + 8

## Exercise 13 B

Calculate

**1)**  12 ÷ 6 + 4    **2)**  3 + 8 ÷ 4    **3)**  25 ÷ 5 + 10

**4)**  10 - 10 ÷ 5   **5)**  20 ÷ 5 + 6    **6)**  100 ÷ (40 ÷ 8)

## Exercise 13 C

Calculate

**1)**  9 x 8 + 4      **2)**  2 + 15 ÷ 6      **3)**  100 ÷ 20 + 4

**4)**  100 ÷ (5 x 4)  **5)**  100 ÷ (5 – 4)   **6)**  8 x (16 + 4)

**7)**  100 ÷ 5 x 4    **8)**  20 x (8 + 3)    **9)**  (2 + 28) ÷ 6

**10)**  (100 – 80) ÷ 5   **11)**  4 x (6 + 1)   **12)**  (4 + 6) x 7

## Exercise 14 A

Find the value of the following expressions when x = 4 and

**1)**  3x      **2)**  2x       **3)**  6x       **4)**  7x       **5)**  8x

**6)**  10x     **7)**  12x      **8)**  20x      **9)**  100x  **10)**  x

## Exercise 14 B

Find the value of the following expressions when x = 6 and y = 2

**1)** 3y    **2)** 3x + 2y  **3)** 4x – 7y  **4)** 6x – 5y

**5)** 10x + 3y  **6)** 2x – 4y  **7)** 7x + 7y  **8)** 5x – y

## Exercise 14 C

Find the value of the following expressions when x = 3 and y = 5

**1)** xy    **2)** 4xy    **3)** 6yx    **4)** 5xy

**5)** 3xy + 2x    **6)** 2xy + 4x    **7)** 4xy – 2y    **8)** 10xy – 3xy

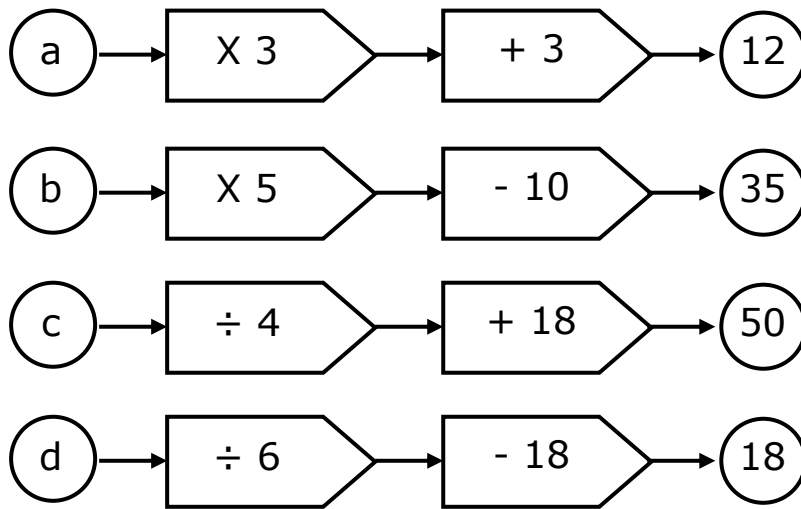| BA3.1 | I understand Inverse Operations and know how to use them in backward number machines. |

## Exercise 15 A

Find the input to each of the following number machines
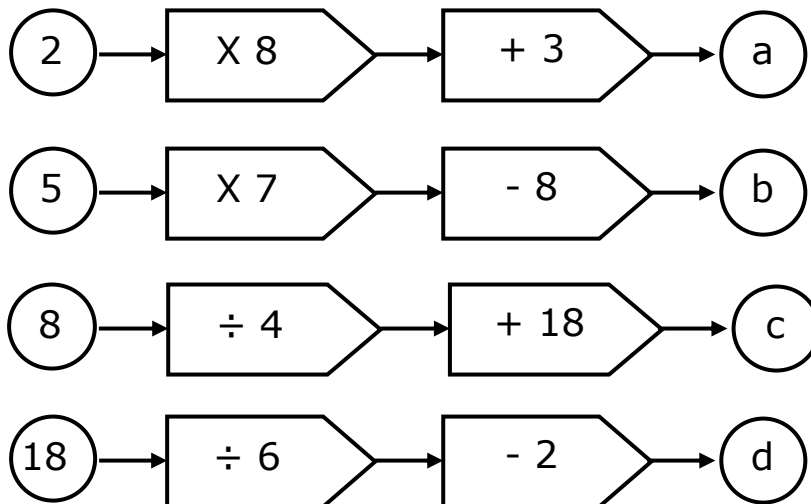
## Exercise 15 B/C

Find the input to each of the following number machines

| | | | | | | |
|---|---|---|---|---|---|---|
| (a) → | X 3 | → | + 3 | → | (12) |
| (b) → | X 5 | → | - 10 | → | (35) |
| (c) → | ÷ 4 | → | + 18 | → | (50) |
| (d) → | ÷ 6 | → | - 18 | → | (18) |

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BA3.2    I can solve equations by using Inverse Operations and by keeping the equation balanced.

## Exercise 16 A

Solve the following equations:

**1)**  $x + 3 = 5$    **2)**    $x + 5 = 9$    **3)**  $x + 2 = 8$    **4)**  $x - 3 = 9$

**5)**  $x - 4 = 7$    **6)**    $x - 5 = 16$    **7)**  $x + 2 = 28$    **8)**  $x - 13 = 1$

**9)**  $2x = 6$    **10)**    $3x = 15$    **11)**  $6x = 24$    **12)**  $7x = 42$

## Exercise 16 B

Solve the following equations:

**1)**  $2x + 3 = 9$    **2)**    $3x + 5 = 20$    **3)**  $5x + 2 = 22$    **4)**  $7x - 3 = 18$

**5)**  $8x - 4 = 12$    **6)**    $6x - 5 = 19$    **7)**  $7x + 2 = 30$    **8)**  $2x - 13 = 1$

## Exercise 16 C

Solve the following equations

**1)** $3x + 1 = 2x + 3$    **2)** $5x + 3 = 2x + 12$    **3)** $4x - 1 = x + 2$

**4)** $6x - 2 = 2x + 6$    **5)** $5x + 7 = 4x + 11$    **6)** $3x - 3 = x + 3$

**7)** $10x + 1 = 4x + 4$   **8)** $7x - 8 = x - 2$      **9)** $5x - 7 = 3x - 3$

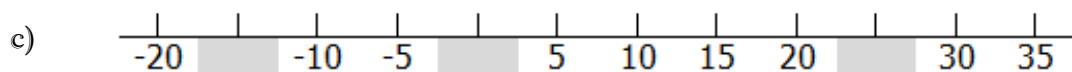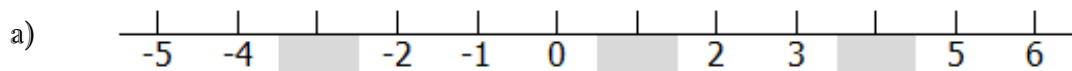## BA4                          Negative Numbers 1

BA4.1    I have revised how to extend the number line below zero and know the meaning of the term Integer.

## Exercise 17 A/B/C

**1)** Use a ruler to neatly copy and complete these number lines filling in all the gaps.

a)


b)


c)


d)

**2)** Copy the list of numbers below and circle all the *integers*.

6    -2    5·4    $\frac{3}{4}$    0    -53·8    23    -2    $2\frac{1}{2}$

**3)** Copy the list of numbers below and circle the numbers which are **not** *integers*.
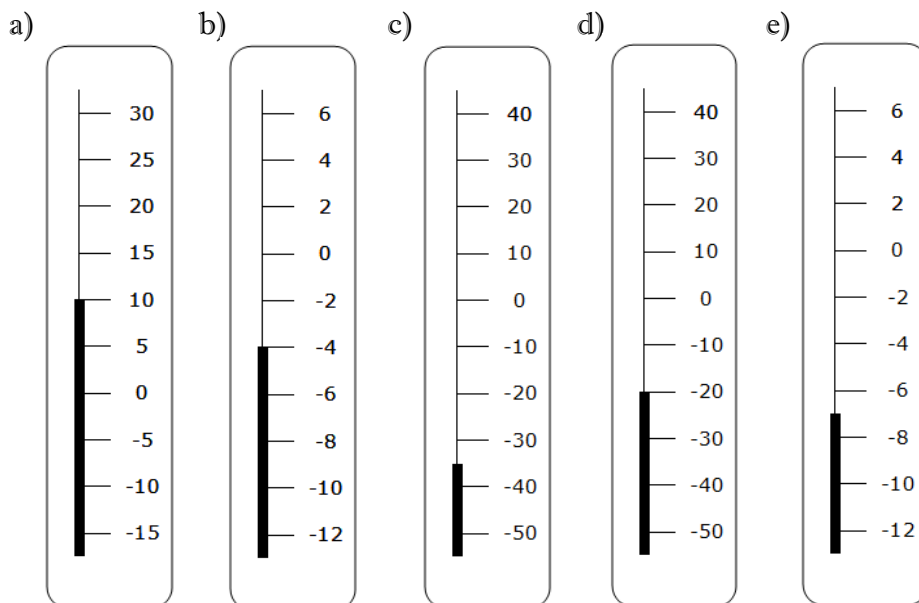
33    $2\frac{1}{2}$    -2    6    5·1    0    -1·33    $\frac{3}{4}$    345

BA4.2   I can use negative numbers in the context of temperature

## Exercise 18 A/B

**1)**   Write down the temperature shown on each thermometer.

The temperatures are all in degrees Celsius.



a)

| 30 |
| 25 |
| 20 |
| 15 |
| 10 |
| 5 |
| 0 |
| -5 |
| -10 |
| -15 |

b)

| 6 |
| 4 |
| 2 |
| 0 |
| -2 |
| -4 |
| -6 |
| -8 |
| -10 |
| -12 |

c)

| 40 |
| 30 |
| 20 |
| 10 |
| 0 |
| -10 |
| -20 |
| -30 |
| -40 |
| -50 |

d)

| 40 |
| 30 |
| 20 |
| 10 |
| 0 |
| -10 |
| -20 |
| -30 |
| -40 |
| -50 |

e)

| 6 |
| 4 |
| 2 |
| 0 |
| -2 |
| -4 |
| -6 |
| -8 |
| -10 |
| -12 |

# Exercise 18 C

**1)**   It was -3 °C in the morning.

By lunchtime the temperature had risen to 10 °C.

How many degrees had the temperature risen?

**2)**   The temperature in Glasgow on Monday was 9°C, but by Friday it had fallen to -7°C.

How many degrees had the temperature fallen?

**3)**   The temperature at 7am  in Rutherglen was -11°C.  The weather report said that the temperature would rise by 8 degrees in the next hour.

What would be the new temperature after this rise?

**4)**   A liquid is stored at -24°C. If the temperature of the liquid is reduced by 7 degrees it would reach its freezing point.  What is the freezing point of this liquid?