3 Write the correct symbol, $>$, $=$ or $<$ in each statement.

500 m ......$<$...... 5 km

50 mm ......$>$...... 0.5 cm

5000 cm ......$=$...... 0.05 km [2]

(b) Write one of these symbols $>$, $<$ or $=$ to make each statement true.

π ......$<$...... $\frac{22}{7}$

$(\sqrt{2})^2$ ......$=$...... 2

$\frac{1}{1+1}$ ......$>$...... 2

$(-1)^2$ ......$>$...... -1 [2]

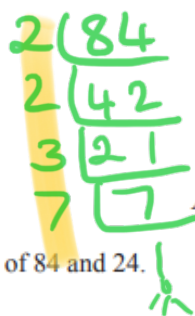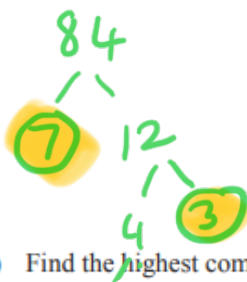**(c)** Put one pair of brackets in each statement to make it true.

(i) $(16 + 8) \div 4 - 2 = 4$ [1]

(ii) $16 + 8 \div (4 - 2) = 20$ [1]

(d) (i) Write 84 as a product of its prime factors.

84
7 12
4 3

2|84
2|42
3|21
7|7

$2 \times 2 \times 3 \times 7$

$2^2 \times 3 \times 7$

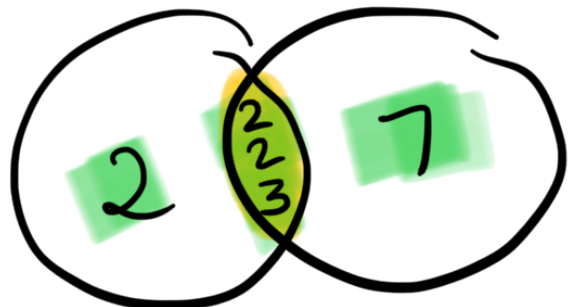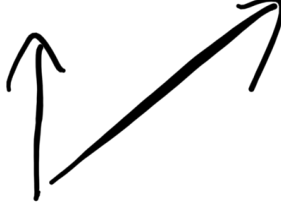Answer(d)(i) $2^2 \times 3 \times 7$ [2]

(ii) Find the highest common factor of 84 and 24.

$HCF : 2 \times 2 \times 3$

$84 : 2 \times 2 \times 3 \times \boxed{7}$

$24 : 2 \times 2 \times \boxed{2} \times 3$

Answer(d)(ii) 12 [2]

24
12 2
3 4
2 2

2 | 2 2 3 | 7

$12 \times 7 \times 2$

$84 \times 2 = 160 + 8$

(iii) Find the lowest common multiple of 84 and 24.

168

Answer(d)(iii) .... 168 .... [2]

(e) Here are the first four terms of a sequence.

-1 3   7   11   15   +4

$+4$ $+4$

(i) Write down the next term in this sequence.

$15 + 4 =$ Answer(e)(i) .... 19 .... [1]

(ii) Explain how you found your answer.

Answer(e)(ii) .... Added four to fifteen .... [1]

(iii) Write down an expression for the nth term of this sequence.

Answer(e)(iii) $4n - 1$ .... [2]

$D n o$

diff with n → term zero

(c) (i)

Circle

360°

72°
157°
$x°$
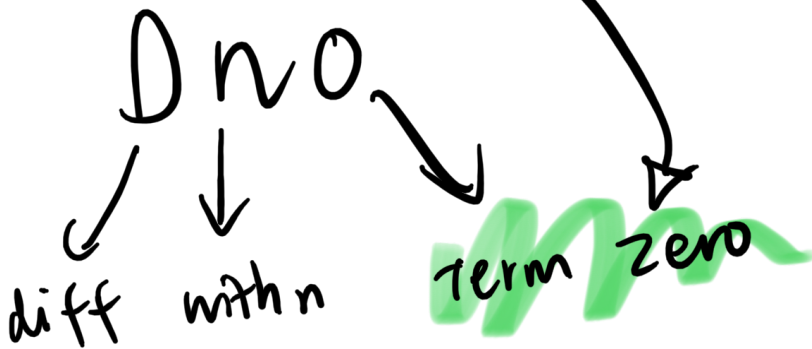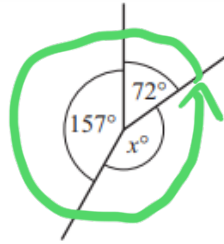
NOT TO SCALE

157 + 72
157
72
——————
229

Work out the value of x.

$$\begin{array}{r} 3\overset{5}{6}0 \\ -229 \\ \hline 131 \end{array}$$

Answer(c)(i) x = **229** [1]

→ 131°

(ii)

49°

$y°$

54°

NOT TO SCALE

= 180°
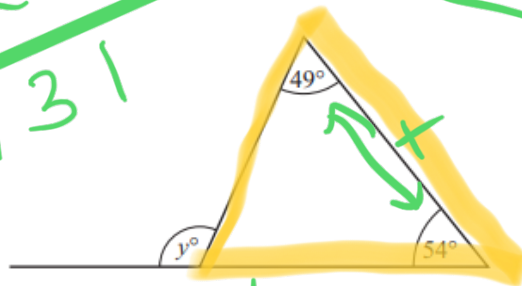
Work out the value of y.

$$\begin{array}{r} 49 \\ 54 \\ \hline 103 \end{array}$$

180 − 103 = 77

77°

Answer(c)(ii) y = **77** [2]

4   The ages of 15 children who go to a swimming club are shown below.

10   11   10   12   12
13   11   12   12   12
12   10   11   11   11

(a) Complete the frequency table.
You may use the tally column to help you.

Age	Tally	Frequency
10	|||	3
11	ⅢⅢ	5
12	ⅢⅢ |	6
13	|	1

[2]

} = 8

} = 15

$(10×3) + (11×5) + (12×6) + (13×1)$

$30 + 55 + 72 + 13$

$85 + 85 = 170$

(b) For the ages of the 15 children, find

  (i) the range,

$$13 - 10$$

Answer(b)(i) .... **3** .... [1]

  (ii) the mode,

Answer(b)(ii) .... **12** .... [1]

  (iii) the median,

$$\frac{n+1}{2} = \frac{15+1}{2} = \frac{16}{2} = 8^{th}$$

Answer(b)(iii) .... **11** .... [1]

  (iv) the mean.

$$\frac{170}{15}$$

$$11.3$$
$$15\overline{)170.5050}$$

$$= 11.333$$

Answer(b)(iv) .... **11.3** .... [2]

15
30
45
60

(d) One of Simon's presents is a bag of sweets.
He decides to eat the sweets in a sequence.
On day 1 he eats 1 sweet, on day 2 he eats 5 sweets, on day 3 he eats 9 sweets and so on.

  (i) Describe in words the rule for continuing the sequence ▮, 5, 9, 13, 17 ....
  $^{+4+4+4}$

Answer(d)(i) .... **add   four** .... [1]

  (ii) Write down an expression for the number of sweets he eats on day *n*.

Answer(d)(ii) .... **4n − 3** .... [2]

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term
zero ⟵ **−3** | 1   5   9
                    +4 +4

$$1 - 4 = -3$$