

$$10. \begin{array}{cccccc} |496-51| & + & |918-496| & + & |1202-918| & + & |1016-1202| & + & |1422-1016| \\ 445 & + & 422 & + & 284 & + & 186 & + & 406 \\ & & & & & & & & 1743 \end{array}$$

$$11. a) \begin{array}{cccc} |310.45-359.22| & + & |295.78-310.45| & + & |513.65-295.78| & + & |425.59-513.65| \\ 48.77 & & 14.67 & & 217.87 & & 88.06 \\ & & & & & & 369.37 \end{array}$$

b) net change = deposits - withdrawals
change in part (a) is deposits + withdrawals.

$$12. a) \frac{|17-2|}{2} = \frac{15}{2} \text{ or } 7.5 \quad b) \frac{|90-90|}{2} = \frac{180}{2} \text{ or } 90$$

$$c) \frac{|1.25-0.5|}{2} = \frac{1.75}{2} = 0.875$$

$$13. \begin{array}{ccccccc} 0 & \rightarrow & 1600 & \rightarrow & 900 & \rightarrow & 2000 & \rightarrow & 500 \\ |1600-0| & + & |900-1600| & + & |2000-900| & + & |500-2000| \\ 1600 & + & 700 & + & 1100 & + & 1500 \\ & & & & & & 4900 \text{ m, } 4.9 \text{ km} \end{array}$$

$$14. a) 2089 - 440 = 1649 \text{ m}$$

$$b) \begin{array}{ccccccc} 440 & \rightarrow & 935 & \rightarrow & 597 & \rightarrow & 1050 & \rightarrow & 2089 \\ 495 & & 338 & & 453 & & 1039 & & = 2325 \text{ ft} \end{array}$$

$$15. \begin{array}{l} 7.65 \rightarrow 7.28 \rightarrow 8.10 \rightarrow x \\ .37 \quad .82 \quad |x-8.1| \quad (\text{falls so } x-8.1 \text{ is negative}) \\ .37 + .82 + 8.1 - x \\ 9.29 - x = 1.55 \\ -x = -7.74 \\ x = 7.74 \\ 7.74 - 8.1 \\ -.36 \quad \text{dropped } \$0.36 \end{array}$$

Hilroy

$$16a) 2 \rightarrow 7 \rightarrow 3$$

$$5 + 4 + d = 15$$

$$d = 6 \text{ Km}$$

$$b) 3 \text{ Km} + 6 \text{ Km} = 9 \text{ Km mark.}$$

$$17a) 2.5^2 + 3^2 + 5^2 + 7.1^2 = 90.66 \quad (M)$$

$$|(-2.5)^2| + |3^2| + |5^2| + |7.1^2| = 90.66 \quad (J) \quad \text{both get } 90.66$$

b) squaring gives positive values so squaring/absolute value gives the same as absolute value/squaring.

$$c) \text{ Yes. } |x^2| = x^2$$

$$(|x|)^2 = \cancel{(-x)(-x)} \text{ or } x \cdot x = x^2$$

always true.

18 a) $|x-5|$ if $x \geq 5$ absolute value is not needed as it will be positive

∴ $x-5$ if $x \geq 5$

if $x < 5$ $x-5$ is negative, so absolute value makes $-(x-5)$ or $5-x$

∴ $5-x$ if $x < 5$

$$b) \text{ (i) } |x-7| = \begin{cases} x-7, & x \geq 7 \\ 7-x, & x < 7 \end{cases}$$

$$\text{(ii) } |2x-1| = \begin{cases} 2x-1, & x \geq \frac{1}{2} \\ 1-2x, & x < \frac{1}{2} \end{cases}$$

$$\text{(iii) } |3-x| = \begin{cases} 3-x, & x \leq 3 \\ x-3, & x > 3 \end{cases}$$

$$\text{(iv) } |x^2+4| = x^2+4 \quad \text{as it is always } (+)$$

19. Julie: $|7| = -7$ (incorrect)

to determine the absolute value of a number; leave positive values alone, change negative values to positive.

* or square the number, then find the positive square root

20. $45 \rightarrow 67 \rightarrow 32 \rightarrow 58$
 $22 \quad 35 \quad 26 \quad = 83 \text{ mm}$

21. you run 2Km east, then 2Km west, then 2Km east, then 2Km west
instead of $2 - 2 + 2 - 2 = 0$
 $|2| + |-2| + |2| + |-2|$
 $2 + 2 + 2 + 2 = 8$ is how far you ran.