

HOMEWORK: (a, b, c, d, e, f)

9. A classmate is recording the weather during July for a school project and wants help calculating information. He records the following data for one week.

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Max (°C)	12.2	14.5	16.7	12.8	11.3	7.2	-0.3
Min (°C)	3.0	2.1	4.6	3.2	6.4	-2.9	-6.0

Round all answers correct to 1 d.p.

- a. What is the difference between the lowest temperature and the highest temperature recorded during this week?
diff = $T_{max} - T_{min} = 16.7 - (-6.0) = 22.7$
- b. What is the average (mean) minimum temperature?

c. Your classmate tries to predict temperatures and says that the minimum temperature = $\frac{1}{4} \times$ maximum temperature.

He says this is the same as dividing by -4. Explain why this may not be correct.

d. He then tries to make another prediction that involves taking the square root of the maximum temperature. Why might this not be a good idea?

e. On the Monday after this week, the temperature rises by 6.5 °C from Sunday's minimum temperature. It then drops by 3.2 °C overnight and rises by 8.9 °C on the Tuesday. What is the minimum temperature on the Monday night and the maximum temperature on the Tuesday?

f. His last prediction involves subtracting 6 from the maximum temperature, then dividing by 2 to predict the minimum temperature. Calculate the predicted values for the minimum temperature for each of his three methods and discuss which method may be most accurate.



12.49 → 12.5

12.45 → 12.5

12.44 → 12.4

$T_{min} = \frac{1}{4} \times T_{max}$

$T_{min} = \frac{T_{max}}{-4}$

b). average (mean) = $\frac{\text{add all numbers}}{\text{number of numbers}}$

mean = $\frac{3.0 + 2.1 + 4.6 + 3.2 + 6.4 + (-2.9) + (-6.0)}{7}$

= $\frac{10.4}{7}$ ✓

= 1.48 → 1.5 (1 d.p.)

c) the negative sign would REVERSE the original sign that the Tmax has

d) What is a limitation of square roots?

$\sqrt{-4} = 2i$

*there is no value that you can SQUARE to get a negative 4...

$(-2)^2 = 4$

$2^2 = 4$

In our set of Tmax values, there is -0.3, which CAN NOT be put into the square root.

$\sqrt{4} = 2 \text{ or } -2 \dots$
 $\sqrt{4} = \pm 2$

NO
($\sqrt{-4}$ does not produce neither 2 or -2)

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Method 1:	$\frac{T_{max}}{4}$	3.6 ✓	4.2 ✓				
Method 2:	$\sqrt{T_{max}}$	3.5	4.1				
Method 3:	$\frac{T_{max} - 6}{2}$	3.1	5.4				

Complete the table above:

- Find rest of values (Thu - Sun)
- Tick the closest value to Tmin (✓)
- Comment on the best method for estimating Tmin (#1, #2 or #3).