

SCIENTIFIC METHOD & METRICS

TEST REVIEW KEYS

“FIRST QUIZ IN PHYSICAL SCIENCE”

1. B

2. D

3. G

4. F

5. A

6. $42 \text{ cm} = 0.00042 \text{ km}$

7. $8.7 \text{ g} = 8700 \text{ mg}$

8. $80 \text{ ml} = 0.08 \text{ L}$

9. $43 \text{ m} = 43000 \text{ mm}$

10. metric system based on tens – easier to remember values of units, easier to convert measurements

11. hypothesis = educated guess; an experiment tests whether or not a hypothesis is correct

- 12.
- a. if melting rate depends on the temperature of the environment
 - b. the outside temperature – it is the factor that clem can control / change (by choosing warm or cooler days to place the bottle outside)
 - c. the rate at which the ice melts – it depends on temperature
 - d. it **should be** the 70° day – a day that is neither warm nor cool – so that it would be the standard temperature to which the 60° day and the 80° day would be compared. HOWEVER, the 70° day can't be the control, because it is a cloudy day, whereas the 60° day and the 80° days were sunny, so not all other factors were constant on the 70° day.
 - e. yes, because all other factors on the 60° day and the 80° day were constant, so he can conclude if ice melts more quickly on warmer or cooler days. However, his results would be better if the 70° day was sunny as well.

KEY – METRIC CONVERSIONS A

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|--------------|-----------------|--------------|---------------|
| 1. 14.35 cm | 2. 3820000 dm | 3. 13900 dm | 4. 116.3 dm |
| 5. 1.779 m | 6. 1.841 hm | 7. 918000 m | 8. 870000cm |
| 9. 77300 dam | 10. 0.812 | 11. 64.7 km | 12. 1.464 dam |
| 13. 37600 cm | 14. 69400000 cm | 15. 78000 mm | 16. 16.27 m |
| 17. 14280 m | 18. 1801000 m | 19. 116 m | 20. 12200 dm |

KEY – IDENTIFY THE CONTROLS AND VARIABLES

1. SMITHERS QUESTION:

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|------------|----------------------|---|
| 1. group B | 2. the special juice | 3. productivity / # of stacks of paper stapled |
| 4. group A | 5. can't conclude | 6. get a measurement of how productive each group was before experiment |

2. HOMER QUESTION:

- | | |
|---|--|
| 1. shower covered in slime | 2. ½ of shower that is sprayed with water (because this is “normal”) |
| 3. coconut juice | 4. whether or not the slime goes away |
| 5. ½ of shower sprayed with coconut juice | 6. juice didn't work |

3. BART QUESTION:

- | | |
|---|---------------------------|
| 1. group of mice not exposed to microwaves | 2. exposure to microwaves |
| 3. strength of mice (as measured by ability to move blocks of wood) | |
| 4. group of mice that were exposed to microwaves | |
| 5. exposure to microwaves probably doesn't produce a change in strength. HOWEVER , he should have got a measurement of how strong each group was before the experiment. | |

STEPS OF THE SCIENTIFIC METHOD PROBLEM:

1. A 2. C 3. B 4. G 5. E 6. F 7. D