

# Period 1 - Day 2 TRIALS

Your Car Data: Car Number:

Member's Numbers:

Period:

|   | D (Distance of Ramp) | T (time on ramp) | D/T= Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA<br>Force of Car | Distance Flown |
|---|----------------------|------------------|----------------------------|-------------|--|---------------------------------|----------------|
| Trial 1   |                      |                  |                            |             |  |                                 |                |
| Trial 2   |                      |                  |                            |             |  |                                 |                |
| Trial 3   |                      |                  |                            |             |  |                                 |                |
| Trial 4   |                      |                  |                            |             |  |                                 |                |
| Once you have established the farthest jump your car can make, please repeat 2 more times |                      |                  |                            |             |  |                                 |                |
| Car 16  | Trial 5              | 2.63             |                            |             |  |                                 |                |
| 17  | Trial 6              |                  |                            |             |  |                                 |                |
|   | Avg. of farthest     |                  |                            |             |  |                                 |                |

Sharing your AVERAGE data of the farthest distance flown with others:

| Car team members               | D (Distance of Ramp) | T (time on ramp) | = Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA<br>Force of Car | Distance Flown |
|--------------------------------|----------------------|------------------|-------------------------|-------------|--|---------------------------------|----------------|
| 1 #2, #20, #22                 | 2.63                 | 1:12             | 2:34                    | 199         | 2:12   | 421.88                          | 1m             |
| 2 Jason & Cody                 | 2.63m                | 1.07sec          | $S=2.46\text{m/s}$      | 233.4g      | $a=2.3\text{m/s}^2$  | 536.82N                         | 1meter         |
| 3 Nick & Jack                  | 2.63m                | .915             | 2.91                    | 163.6       | 3.18   | 520N                            | 1M             |
| 4 Amanda #19<br>Olivia #18     | 2.63m                | .73s             | 3.60m/s                 | 219.25g     | $5\text{m/s}^2$  | 1,096N                          | 1m 35cm        |
| 5 Sumin; #20                   | 2.63m                | 0.885s.          | 2.975m/s                | 151.7g      | $3.37\text{m/s}^2$   | 509.99N                         | 1.5            |
| 6 Kaila, Briar, Brandon; 2/3/3 | 2.63m                | .96s             | 2.73m/s                 | 437         | 3  |                                 |                |
| 7 16/24                        | 2.63                 | .94              | 12.40                   | 304.5       | 2.21   | 679.90                          | 1M             |
| 8 11/15                        | 2.63                 | 1.11             | 2.36                    | 138         | 0.89   | 122.82                          | 1M             |
| 9 Sam and Dom                  | 2.63                 | 1.05             | 2.23                    | 97          | 2.123  | 205.93                          | 1m             |
| 10 Aleena + Giovanna           | 2.63                 | 1.62             | 1.76                    | 2.49        | 1.24   | 458.16                          | 1.35           |
| 11 Chanelle + Chloe            | 2.63m                | 1.25             | 2.14                    | 161         | 1.7747   | 171.389                         | 1.25           |
| 12 Aisha + Grace               | 2.63                 | 1.23             | 2.39                    | 230g        | 1.9924   | 458                             | 1.2m           |
| 13 Abby + Natalie              | 2.63                 | 1.09s            | 2.45                    | 4.38g       | 2.32   | 10.15                           | 1m             |
| 14 #14; #32                    | 2.63                 | 1.17             | 2.25                    | 183.3       | 1.93   | 353.49                          | 1.2m           |

Conclusion: Examining the data above, what is your analysis of:

1. the impact of mass on the speed \_\_\_\_\_
2. the impact of mass on distance flown \_\_\_\_\_
3. the relationship of speed to distance flown \_\_\_\_\_
4. the relationship of the car's force and the formula: F=MA \_\_\_\_\_
5. Utilizing what you have seen on other cars, and learned from testing, what do you think you could do to update your car to make it fly further? \_\_\_\_\_

Pd 2

Your Car Data: Car Number:

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|   | D (Distance of Ramp) | T (time on ramp) | D/T= Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA Force of Car | Distance Flown |
|---|----------------------|------------------|----------------------------|-------------|--|------------------------------|----------------|
| Trial 1   |                      |                  |                            |             |  |                              |                |
| Trial 2   |                      |                  |                            |             |  |                              |                |
| Trial 3   |                      |                  |                            |             |  |                              |                |
| Trial 4   |                      |                  |                            |             |  |                              |                |
| Once you have established the farthest jump your car can make, please repeat 2 more times |                      |                  |                            |             |  |                              |                |
| Trial 5   |                      |                  |                            |             |  |                              |                |
| Trial 6   |                      |                  |                            |             |  |                              |                |
| 15 → Avg. of farthest (31)  |                      |                  |                            |             |  |                              |                |

Sharing your AVERAGE data of the farthest distance flown with others:

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| Car team members | D (Distance of Ramp) | T (time on ramp)     | = Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA Force of Car | Distance Flown |  |
|------------------|----------------------|----------------------|-------------------------|-------------|--|------------------------------|----------------|--|
| 4 and 7          | 2.63m                | 1.27                 | 2.21                    | 145g        | 2.03   | 294.83                       | 1m             |  |
| 11 and 17        | ↓                    | 0.77                 | 3.79                    | 134.1g      | 5.2  | 697.2                        | 1m             |  |
| 16 + 25          |                      | .93                  | 2.83                    | 907g        | 3.04   | 2,758.02                     | 1m             |  |
| 5, 8, 10, 12     |                      | .70                  | 3.8m/ms                 | 190.4g      | 5.46m/ms   | 21089.58                     | 1m             |  |
| 26, 29, 30       |                      | <del>1.07</del> 1.07 | 2.78                    | 366         | 1.92   | 702.7                        | 1m             |  |
| 13, 32           |                      | 1.11                 | 2.36                    | 217.5g      | 2.12   | 461.1                        | 1m             |  |
| 2, 9             |                      | 0.8                  | 3.59                    | 253.4       | 4.49   | 610.47                       | 1m             |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |
|                  |                      |                      |                         |             |  |                              |                |  |

Conclusion: Examining the data above, what is your analysis of:

1. the impact of mass on the speed \_\_\_\_\_
2. the impact of mass on distance flown \_\_\_\_\_
3. the relationship of speed to distance flown \_\_\_\_\_
4. the relationship of the car's force and the formula: F=MA \_\_\_\_\_
5. Utilizing what you have seen on other cars, and learned from testing, what do you think you could do to update your car to make it fly further? \_\_\_\_\_

# Period 5

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|  | D (Distance of Ramp) | T (time on ramp) | D/T= Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA Force of Car | Distance Flown |
|--|----------------------|------------------|----------------------------|-------------|--|------------------------------|----------------|
| Trial 1  |                      |                  |                            |             |  |                              |                |
| Trial 2  |                      |                  |                            |             |  |                              |                |
| Trial 3  |                      |                  |                            |             |  |                              |                |
| Trial 4  |                      |                  |                            |             |  |                              |                |
| <b>Once you have established the farthest jump your car can make, please repeat 2 more times</b> |                      |                  |                            |             |  |                              |                |
| Trial 5  |                      |                  |                            |             |  |                              |                |
| Trial 6  |                      |                  |                            |             |  |                              |                |
| Avg. of farthest   |                      |                  |                            |             |  |                              |                |

**Sharing your AVERAGE data of the farthest distance flown with others:**

| Car team members                     | D (Distance of Ramp) | T (time on ramp) | = Speed prior to flight | Mass of car | Acceleration of Car<br>$a = \frac{\Delta V}{\Delta t} = \frac{V_2 - V_1}{t_2 - t_1}$ | Calculated F=MA Force of Car | Distance Flown |
|--------------------------------------|----------------------|------------------|-------------------------|-------------|--|------------------------------|----------------|
| 1<br>Cleveland State<br>#4, #5       | 2.63m                | .60              | 4.38                    | 209.8g      | 7.31   | 1,534                        | 1m             |
| 2<br>Sydney N. #22<br>Megan Hill #12 | 2.63m                | .63              | 4.303                   | 313         | 7.313  | 2,288.804                    | 1m             |
| 3<br>Nina C<br>Andrea F              | 2.63m                | .65              | 4.04                    | 200.7g      | 6.08   | 1204.26                      | 1.3m           |
| 4<br>#25; #19; #30                   | 2.63m                | 0.66             | 4.04                    | 117.8g      | 4.71   | 497.51                       | 1m             |
| 5<br>Chelsea Dirkse #6               | 2.63m                | .72              | 3.65                    | 425g        | 5.07   | 2,154.75                     | #WALRUS        |
| 6<br>#7; #32                         | 2.63m                | .70              | 3.8                     | 491.4g      | 5.7  | 2,791                        | 1m             |
| 7<br>#9 #33                          | 2.630m               | .65              | 4.08                    | 157g        | 639.16   | 119450                       |                |
| 8<br>#23, #27                        | 2.63m                | .74              | 3.55                    | 230.5g      | 4.81   |                              |                |
| 9<br>#35                             | 2.63m                | .75              | 3.51                    | 178.8g      | 4.68   | 602.79                       |                |
| 10<br>#10, #11                       | 2.63m                | .69              | 3.9                     | 135g        | 5.93   | 801                          | 1m             |
| 11<br>#2, #16                        | 2.63m                | 0.71             | 3.65                    | 110g        | 4.76   | 450.667                      |                |
| 12<br>#13, #15                       | 2.63m                | 1.02             | 2.6                     | 153g        | 2.6  | 396.02                       |                |
| 13<br>#14, #18                       | 2.63m                | .7               | 3.77                    | 106.8g      | 5.42   | 578.16                       | 1m             |
| 14<br>#20                            | 2.63m                | .79              | 3.33                    | 296.3g      | 1.83   | 305.93                       |                |

**Conclusion: Examining the data above, what is your analysis of:**

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| Trial 5  |                      |                  |                            |             |  |                                 |                |
| Trial 6  |                      |                  |                            |             |  |                                 |                |
| Avg. of farthest   |                      |                  |                            |             |  |                                 |                |

**Sharing your AVERAGE data of the farthest distance flown with others:**

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|------------------|----------------------|------------------|-------------------------|-------------|--|---------------------------------|----------------|
| 1 6, 10          | 2.63                 | .71              | 3.7                     | 96.2        | 5.21   | 355.94                          | 1 m            |
| 2 17, 23         | 2.63                 | .716             | 3.805                   | 204.2       | 5.65   | 1463.87                         | 1 m            |
| 3 18, 32         | 2.63                 | 1.05             | 2.83                    | 337.1       | 3.40   | 1,147.3                         | 1 m            |
| 4 3, 1           | 2.63                 | 0.91             | 3.12                    | 148.05      | 4.1525   | 611.05                          | 1 m            |
| 5 15, 3          | 2.63                 | .59              | 4.46                    | 328.1       | 7.64   | 2,505.04                        | 1 meter        |
| 6 20, 33         | 2.63 m               | .7s              | 3.82 m/s                | 145.9g      | 5.63 m/s <sup>2</sup>  | 821.66 N                        | 1 m            |
| 7 19             | 2.63 m               | 0.6              | 4.4 m/s                 | 97 g        | 7.4 m/s <sup>2</sup>   | 728.11 N                        | 1 m            |
| 8 8, 14, 29, 26  | 2.63m                | 0.98s            | 2.7 m/s                 | 175.2g      | 2.77 m/s <sup>2</sup>  | 485.6N                          | 1m             |
| 9 24, 27, 21     | 2.63 m               | 0.72             | 3.65 m/s                | 108g        | 5.06 m/s <sup>2</sup>  | 951.28                          | 1m             |
| 10 25, 28, 22    | 2.63m                | .61              | 4.4 m/s                 | 291g        | 7.45 m/s <sup>2</sup>  | 2167                            | 1m             |
| 11 1, 12         | 2.63m                | 0.52             | 5.18 m/s                | 345.7g      | 10.16 m/s <sup>2</sup>   | 3,511.16                        | 1m             |
| 12 2, 30         | 2.63                 | 0.76             | 3.46 m/s                | 28.9        | 2.15   | 5.67016                         | m              |
| 13               |                      |                  |                         |             |  |                                 |                |
| 14 16, 9         | 2.63                 | .61              | 3.27                    | 74g         | 4.40 m/s <sup>2</sup>  | 2,762.03                        | 1m             |

**Conclusion:** Examining the data above, what is your analysis of:

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