



Mental Math 7th/8th

Person 1

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| 1 | Consider a regular hexagon. The maximum number of diagonals that intersect at a single point is 3. What is the maximum number of diagonals that intersect at a single point for a regular polygon with 10 sides? |
| 2 | Consider the word "M A T H." [pause] If all twenty-four rearrangements of these letters are listed in alphabetical order, what is the 20th to appear on the list? The first is "A H M T" |
| 3 | What is 763 minus 577? |
| 4 | 29 Rubik's cubes are being distributed to Ashley, Briana, and Cathleen. If Cathleen received 3 more Rubik's cubes than Briana, and Briana received 1 more Rubik's cube than Ashley, how many Rubik's cubes were distributed to Cathleen? |
| 5 | If the time is currently six twenty, what is the measurement in degrees of the acute angle between the hands of an analog clock? |

Person 2

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| 1 | The probability of rolling 6 on a standard die is the same as the probability of rolling two dice and having them sum to a number X . What is X ? |
| 2 | A rectangle has integer dimensions and a diagonal of length 10. What is the perimeter of this rectangle? |
| 3 | There are 4 Dalmatians in a room. These Dalmatians have a total of 160 spots. If each Dalmatian has at least 15 spots, what is the most number of spots a single Dalmatian can have? |
| 4 | What is 43 times 12? |
| 5 | Following the order of operations, what is 4 [pause] plus 2 [pause] times 3 [pause] plus 6 [pause] plus 6 [pause] times 2? |

Person 3

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| 1 | What is the quantity 5 minus 1 fifth [pause] over the quantity 5 plus 1 fifth? Express your answer as a fraction in simplest terms. |
| 2 | Set A contains six numbers. The six numbers are X and the first five odd numbers: 1, 3, 5, 7, 9. The average of the six elements of A is positive. If X is an integer, what is the minimum value it can take on? |
| 3 | Amber scored 97, 89, and 72 on three tests. What is her average score? |
| 4 | Function F reverses the digits of a two digit number and adds 6 to the result. What is F of F of F of 12? |
| 5 | Solve for x : x squared [pause] plus $6x$ [pause] equals negative 9. |

Person 4

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| 1 | What is the distance between the points 1 comma 1 [pause] and 5 comma 4? |
| 2 | Evaluate [pause] 17 squared minus 13 squared. |
| 3 | A perfect cylinder of radius 3 and volume 108π is placed upright on a perfectly flat ground. A bug is on the top of the cylinder, exactly in the middle. If the bug wishes to get to ground level, and it must crawl on the surface of the cylinder, what is the minimum distance it must crawl? |
| 4 | What are the roots of the equation 0 equals x squared [pause] minus $6x$ [pause] plus 2. Hint: you will have to use the quadratic formula. |
| 5 | What is the sum of the exterior angles of a square in degrees? |