CCTCA 2026

Engaging Math Games With Engaging Dice

Presented by John Felling

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MYSTERY ROLL

You will need to play either 50 or 100 rounds. Play in groups of 3. Every round record L, B and G plus figure out the RANGE between G and L. Use a calculator if you wish. When you are playing you should use your highlight pen to mark any unusual rolls - for example, tie rolls, sequences, unusual winning rolls, etc. Circle the points you score.

Round#	Least	Between	Greatest	Range	Analyze
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

Once you have completed either 50 or 100 rolls
answer the following questions.
Work Together!

1. What is the average range of the rolls?
2. What percentage of the time does a tie roll happen?
3. What percentage of the time did you score a point? If you kept track of all winners, what percentage of the time did all 3 players score a point?
4. Describe your most unusual round. Try to interpret the probability of that event happening. Remember 1/30 chance of rolling any number.
5. Write one question for the rest of the group to use with their data.

MYSTERY ROLL (5- Player)

	Lowest	Middle Low	Middle	Middle High	Highest	RANGE	ANALYZE
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							

BETWEENERS & CUBIC MYSTERY
RECORDING SHEET

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER

PLAYER	ROLL	NUMBER
Jaxon	6, 5, 3	3 5/6 (between wins)
Tenshima	2, 3, 3	3 2/3 (lowest no win)
Raymond	4, 6, 3	4 3/6 (highest no win)

Follow Up Activity: Have students space their answers proportionally on an "open" number line and justify their placement to the other players.

SIXTY SOMETHING

SKILLS: Order of operations, probability

PLAYERS: 2 to 4

EQUIPMENT: Two thirty-sided (1-30) dice, paper and pencil

GETTING STARTED: Player One rolls the dice and may choose to add, subtract, multiply or divide the numbers rolled. The goal is to reach the total of 60 in three rolls. A player may choose to 'freeze' after the first or second roll, record their number and their play is over. Players continue to take turns and the player closest to 60 for each round earns 1 point. If a player reaches 60 exactly, they earn 2 extra bonus points. The first player to score 20 points is the winner.

EXAMPLE:

Player One:

First Roll:  and 

Player One chooses to multiply the numbers for a total of 24 (4 x 6).

Second Roll:  and 

Player One chooses to add the numbers for a total of 30 (28 + 2). Player One now adds the first and second rolls to equal 54 (30 + 24).

Player One says 'freeze' with 54 and chooses not to take a third roll.

Player Two:

First Roll:  and 

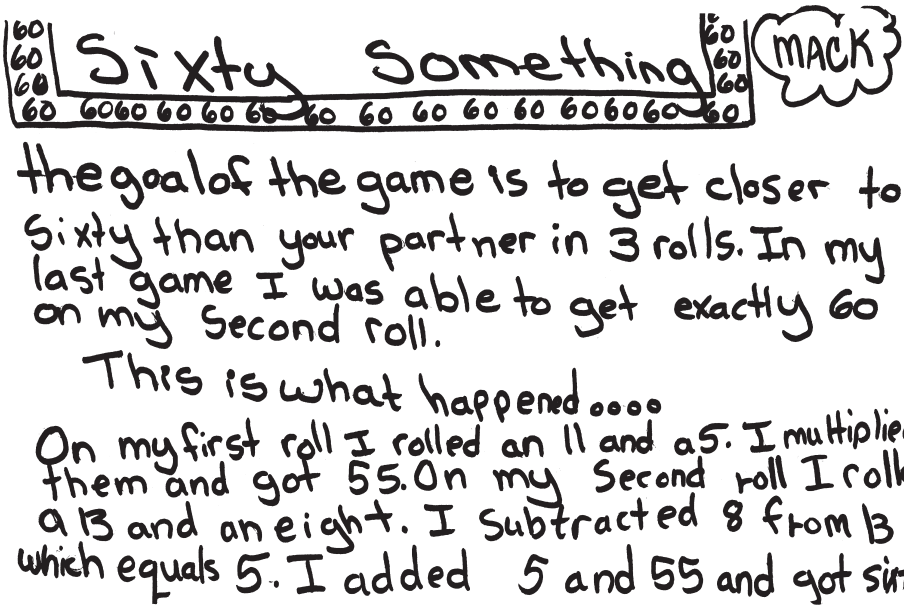
Player Two chooses to add the numbers for a total of 38 (17 + 21).

Second Roll:  and 

Player Two chooses to divide the numbers for a total of 5. Player Two now adds the previous total of 38 to 5 for a total of 43 (38 + 5).

Third Roll:  and 

Player Two chooses to multiply the numbers for a total of 17 (17 x 1). Player Two now adds the previous total of 43 to 17 for a perfect total of 60 (43 + 17). Player Two earns 1 point for that round plus 2 extra bonus points for reaching 60 exactly.



COMMIT AND CAPTURE

1. $\square \times (\square - \square) - \square =$

2. $\square + \square \times \square \div \square =$

3. $\square^2 - \square \times \square - \square =$

4. $\square + \square \div \square \times \square =$

5. $\square \times (\square + \square) - \square =$

6. $\square [\square^3 \times (\square - \square)] =$

7. $\square \div \square + \square \times \square =$

8. $\square \div \square \times \square - \square =$

Quick Version: Teams of two competing against other teams of two. Each team has their own gameboard, there can be a variety of dice to use or just use standard 6-sided dice. Teams take turns choosing a die and rolling it. They must fill in an open space of the math sentence with the number they rolled. Teams fill in one math sentence at a time. When the sentence is complete for both teams, the team with the greatest value as an answer wins the round.

Quicker Version: Played the same as above but the roll that one team makes must be used by both teams. There is a possibility for a lot of ties with this method.

Most Math Version: Played the same as Quicker Version except each team may place the roll on any open space on any math sentence. Scoring is not performed until the entire sheet has been filled in.

Thought Provokers:

1. Since it is possible for negative answers, who wins when the outcome is -34 for one team and +19 for the other team (-34 has a greater absolute value compared to +19)?
2. What about playing for the smallest possible value?
3. What about playing for the middle value in a game of 3 teams?

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FRACTION FREEZE

LEVEL: Grade 4 and up

SKILLS: Adding fractions

PLAYERS: 2

EQUIPMENT: Two 12-sided dice, paper, pencil, fraction pieces (optional)

GETTING STARTED: The goal of the game is to create the fraction closest to one-whole, after three possible turns. Player one begins by rolling both dice, naming and recording their fraction in proper form and deciding whether to freeze or roll again on a future turn.

Player two now rolls and does the same. If one player chooses to freeze they do not roll again and the other player may continue on for a possible additional two rolls (their fractions are added together as rolls accumulate). Once all rolls have been taken or both players have chosen to freeze, both players compare their fractions or sum of fractions to one another. The player with the fraction closest to one-whole without going over earns 1 point for the round. If any or both players create a fraction of EXACTLY one-whole, then 2 points are earned.

EXAMPLE:

Player One: Roll = 6 and 11 6/11 "six-elevenths". Player one chooses not to freeze and will take an additional turn.

Player Two: Roll = 1 and 5 1/5 "one-fifth". Player two chooses not to freeze and will take an additional turn.

Player One: Roll = 2 and 11 2/11 "two-elevenths". Player one adds their two fractions together and verbalizes their sum. 6/11 + 2/11 = 8/11 and player one chooses to freeze.

Player Two: Roll = 4 and 10 4/10 "four-tenths". Player two adds 1/5 + 4/10 = 6/10 and chooses to roll one more time. Player two takes their third and final turn and rolls one and two and verbalizes "one-half". Player two adds 6/1 O + 1/2 = 6/10 + 5/10 = 11/10 or 1 1/10. Player two's fraction is greater than one whole. Player one earns 1 point for the round for being closest to one whole without going over.

VARIATION: Players can choose to record their rolls but not verbalize. Player may choose to secretly roll their fractions, record them and play as previously directed. A third player is involved as the judge for each round and players compare their fractions at the end of the play for comparison. The player with the fraction closest to one-whole is the winner.

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