

Pyramid

Pyramid is a solitaire game with a focus on making tens, strategic thinking and probability.

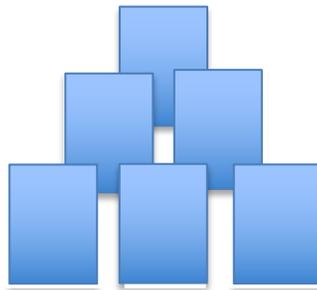
Materials needed:

- 1) Deck of cards (1-10 with Ace=1 and pulling out the jokers and face cards)

Instructions:

To be played as a solitaire game or in collaboration with a partner.

- 1) Shuffle the deck of cards and turning one card over (face up) at a time, lay out a pyramid of cards starting with one at the top and down to a sixth row with six cards in it. In each row, the cards will be layered (partially cover) the bottom of the cards in the row above them. For example, the first three rows will look like this:



And then continue in this manner until all six rows are completed and you have a triangular pyramid shape of cards.

- 2) The cards that you do not use to make the pyramid will be used later in the game and are turned face down in a stack of extra cards.
- 3) The goal of the game is to climb to the top of the pyramid, turning over 1 or 2 cards at a time that make ten. So a 10 card, or 6 and 4, 7 and 3, etc.
- 4) You can only take cards that are not covered by any other cards.
- 5) You begin in the bottom (sixth) row and look for any 10 cards or any two cards that when added together make 10. You take those cards and move them to a new pile, called the ten cards.
- 6) If there is no way to make a 10, you take a card from the top of the extra cards and see if you can use that to make a 10. You keep taking cards until you can make a 10

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- and then remove that card and the other card from the pyramid. The cards you turn over and don't use, go back to the bottom of the stack of extra cards to use again.
- 7) You keep taking and removing 10 cards or two cards that add to 10, working your way up the pyramid. Remember, you only take and remove cards that are not covered by other cards.
 - 8) As you get to the top of the pyramid, you may get stuck and not be able to make any more tens with the cards that are available. This is the end of the game. You add up the numbers on the remaining cards in the pyramid and this is your score.
 - 9) Keep playing and try to improve your score! What strategies could you use?
 - 10) The ultimate game is when you are able to remove all card from the pyramid.

A video demonstrating this game can be found at: <https://bit.ly/SD38pyramid>

Other Variations of Pyramid:

- 1) Have students use up to three cards at a time to make 10.
- 2) Include the face cards (Jack=11, Queen=12 and King=13) and instead of six rows of cards, make seven rows of cards. Make 13 using one, two or three cards.

*Note: As students learn how to play this game, they will consider both strategy and probability. They will look up the pyramid to see what cards are coming to help them make decisions as to what to take to make 10s. Students will also realize that there are only 4 of each card and will begin to keep track of what they need and where those cards are and what the chances are of them getting the cards they need.

BC Mathematics Curricular Content and Competencies:

- number represents quantity (numbers to 10)
- computational fluency develops from a strong sense of number
- relative magnitude and range of numbers
- reading numbers
- decomposing and composing quantities
- addition concepts
- addition facts to 20
- likelihood of events (turning over a 7, etc)
- develop mental math strategies and abilities to make sense of quantities
- develop, demonstrate and apply mathematical understanding through play
- explain and justify mathematical ideas and decisions

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