Year 1/2

Problem Solving Challenge 1

<u>Name of Challenge:</u> Part-Whole Triangles (Michael Minas)
<u>Materials Needed</u>: deck of cards
<u>Extension Prompt</u>: Make 4 rows
<u>Enabling Prompt:</u> Just make 1 row for example (13 = 7+6)

<u>Challenge:</u>   Figure 1

<u>How to play</u>
<u>Players:</u> 2 to 4 players
<u>Materials:</u> Playing cards (Kings = 13; Queens = 12; Jacks = 11).
<u>How to play:</u>
The goal of the game is to create a 'part-whole triangle' such that the two numbers below sum to equal the number above in each possible instance. Figure 1 provides an example of a 'part- whole triangle' as 7 + 6 = 13; 3 + 4 = 7 and 4 + 2= 6.

• Deal six cards to each player. e remaining cards in the deck are referred to as the communal cards.
• Each player arranges their six cards face up into a triangular formation (see Figure 2). it is their starting position for the game, however note that players can rearrange their six cards at any point in the game if they believe it will help them win.
• Turn over a communal card and place it on the discard pile to begin the game.
• On their turn, a player can either pick up the top card on the discard pile, or pick up a new
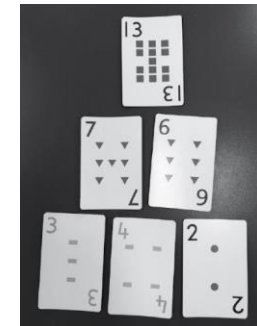
communal card, and use this card to replace one of the cards in their triangle. one player then adds a card to the discard pile to complete their turn.

• Play continues until one of the players completes an accurate part-whole triangle. The winner is the first player to win three rounds.

Figure 2

Year 1/2

Problem Solving Challenge 2

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| <u>Name of Challenge:</u> <u>Ten Frame Filler</u> (Michael Minas) |
| <u>Materials Needed:</u>
Laminated/photocopied tens frames (optional- draw your own tens frames), 9 sided dice (up to 16 tens frames per game)
Game board found <u>here</u> |
| <u>Extension Prompt:</u>
Roll 2 dice and minus the smaller number from the larger one. This is then your 'number' eg. I roll an 8 and a 3 so I do 8-3=5 and colour in 5 squares. |
| <u>Enabling Prompt:</u>
Use counters or unifix to support thinking |
| <u>Challenge:</u>
How to play:

Roll the dice. Record the total rolled using one of the ten-frames in a single, sweeping movement. If there is not enough space in any of the ten-frames, miss a turn. Take it in turns filling in ten-frames. A player who completes the ten-frame (for example, rolling a three and there is a ten-frame with 7 already filled), claims it by writing their initials on top of the ten-frame. The player with the most ten-frames at the end is the winner! |
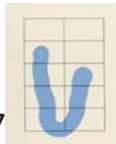
For example, this person rolled a 7 and has recorded it with one sweep (or line). This tens-frame would be completed when a 3 is rolled OR when a 1 and 2 are rolled.

Discuss/reflect

- Was there a strategy that helped you to win the game?
- What numbers do you think were the best to roll? Why?
- Have we found all the combinations to 10?
- What might happen if we had a third player? Would it make it easier or harder to win?

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Problem Solving Challenge 3

<u>Name of Challenge:</u> The Bike Shed
<u>Materials Needed:</u> Piece of paper and pencil
<u>Extension Prompt:</u> Higher number of wheels such as 36 or 42.
<u>Enabling Prompt:</u> Use a lower number eg 12 wheels Use counters or drawings to represent each form of transport.
<u>Challenge:</u> Mrs Ellis opened the gates to the bike storage area at school. She saw 24 wheels. What could be in the bike area?