

Western Shores
Learning Alliance



Ignition Activities for Stage 4 Mathematics Classrooms

Stage 3 to 4 Mathematics Transition Project



The Project:

This document has been put together as a result of an Action Research project aimed at improving student engagement in Stage 4 Mathematics classrooms. It is a result of collaboration between Stage 3 and Stage 4 staff teams from schools across the Western Shores Learning Alliance.

Purpose:

The ignition games in this document are aimed to be used at the beginning of a Mathematics lesson in order to engage students, get them to begin thinking mathematically and excite them for the lesson ahead!

Project Team:

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References:

Where possible we have referenced the resource these games have been taken from. Unfortunately some of the games have been around so long, and modified so many times, it is impossible to track down the original source.

Around the World

Resources

NIL

Rules

- Students should sit in a circle, and one student should stand behind another student in the circle.
- The teacher calls out a times table question for the two students. If the student standing up gets the answer first, he moves to stand behind the next student. If the student sitting down gets the answer first, he stands and takes the other student's place.
- The game continues until one student makes it all the way around the circle, when we have gone "around the world."

Dice Operations

Resources

Pair of dice for each group

Rules

- The dice operations game works best for groups of three or four students.
- Students, one at a time, roll the dice. They perform a specific math operation on the two numbers. You can have them do addition, subtraction or multiplication depending on their age. If you're working on multiplication and a student rolls a six and a three, her answer is 18.
- All of the students take a turn. The student with the highest answer wins that round. You can play any number of rounds.

Read more : http://www.ehow.com/list_7219495_math-game-fillers-teachers.html

Mad Minute

Resources

Worksheets of 10 to 60 problems

Rules

- Mad Minute is a straightforward, simple game. Worksheets of 10 to 60 problems, depending on the difficulty of the problems and the level of the classroom, are handed out, and children are given exactly 60 seconds to complete the problems.
- Whoever finishes first stands up and yells, "Mad Minute!" After this, the timer is stopped and his answers are checked. If any answer is incorrect, play resumes.

Read more : http://www.ehow.com/info_7863270_warmup-games-math-lessons.html

Drills

Resources

Worksheets (or displayed on board) with 25 problems.

Rules

- Math drills are 30- or 60-second exercises that help students to solve problems quickly.
- Give students 25 addition, subtraction, multiplication or division problems and time them for 30 seconds. Ask them how far they got. Let them check their answers.

Read more: http://www.ehow.com/info_8380366_math-warmup-activities.html

Last Person Standing

Resources

NIL

Rules

- This math warm-up is a good way to start the school day. Have all students stand.
- Pick two students and ask them a math question. Only the students who answer correctly remain standing. Continue to ask questions to pairs of students until only one student is left standing. He or she is the math champion for the day.

Read more: http://www.ehow.com/info_8380366_math-warmup-activities.html

Dice Game

Resources

2 dice between 2 students

Rules

- Let pairs of students have two die.
- Ask them to roll both of the die and to add or multiply the two numbers. They should write a number sentence (for example $4 \times 6 = 24$) for each pair of numbers. Ask students to complete at least three problems and compare with and check the number sentences with a partner.

Read more : http://www.ehow.com/info_8380366_math-warmup-activities.html

Group Addition

Resources

NIL

Rules

- Test the mental math skills of the students with an addition game. Start with a simple addition problem such as five plus nine. The child you call on says the answer. She can't say anything else other than the answer. If she says anything else first, she misses and someone else gets a chance. Once she says the answer of 14, choose another person and give them another number to add. For example, you might say, "Plus seven." That student has to say the answer of 14 plus seven without saying anything else. This continues with each student getting a new number to add to the total. Continue until someone misses. See how high you can get as a class before someone makes a mistake or you run out of time.

Read more : http://www.ehow.com/list_7219495_math-game-fillers-teachers.html

Guess My Number

Resources

Rules

- Think of a number between 1-99 and the class get 10 questions which they can ask to help guess the number. Teacher can only answer yes and no, so questions like "is it odd", "is it prime", "is it more than 50" etc are asked. Most classes enjoy it, but you may need to make everyone ask a question in turn as it's easy for some children to dominate the activity.

Roll of the Dice

Resources

2 or 3 dice

Rules

- All the children have to stand up behind their chairs. The teacher should have two or three dice.
- The dice are rolled and the teacher uses the numbers rolled (e.g. 2, 4 and 1) to create a question for the children to answer (e.g. "What is $2+4+1$?").
- The children put up their hands if they know the answer and the teacher picks someone. If the child gets it correct, someone in their row can sit down. If they get the answer wrong, someone in the row has to stand up (if everyone is standing, everyone stays up).
- The aim of the game is for the children to try and get everyone on their row sat down.

If this is the answer...

Resources

Individual whiteboards or paper

Rules

- This is a game called "If this is the answer what is the question?"
- Give children individual whiteboards, then say a number. Encourage them to find as many ways to make the number as possible with as many operations. So if you say 20, they could go for an easy $10+10$ or a more difficult 100 divided by 5.
- This can be differentiated by giving them fractions or decimals, or more obscure numbers. It is also differentiated by outcome.

Maths Champion

Resources

NIL

Rules

- Ask all the children in your class to stand up.
- Pick 2 children and ask a times table question (or a Maths question based on the topic you are teaching at that time). Whoever gets the question wrong, sits down. If they answer correctly, they stay standing.
- Keep going around the class until only one child is left standing. This person is the Maths Champion!

Last Man Standing

Resources

NIL

Rules

- The children stand at the back of the class and answer differentiated multiplication questions. They sit down when they have answered a question correctly. The last person standing has to do a forfeit. My class love the challenge of who will be last!
- Forfeits can include being the teacher's slave for the morning, tidying the classroom or anything silly.

Shoot Out

Resources

Rules

- For this game, the class needs to be ability grouped. Each group has to stand up and call out the answer to differentiated questions. If they are the first to answer correctly they get to shoot someone on their team. They have to sit down. This continues until there is only one person left in that group (they sit down waiting for the final).
- The next group does the same and so on until there are 5/6 children who have won a round. The final can take then place.
- The overall winner can get a prize / house points etc.
- This game can be a general mental maths game or a subject specific one. It can also involve a lot of strategy... who is the best person to get out in their group?

Number Sentences

Resources

Pack of 0 to 9 cards (or bigger)

Rules

- Deal each pair 3 cards and ask them to use the four operations to make as many different number sentences as possible.
- Eg. 3, 4, 5 → $3+4=7$; $5-3=2$; $5+4+3=12$; etc.

Number of the Week

Resources

Whiteboards if available (not essential)

Rules

- Choose a number of the week, which should be written on the board and can be referred to during numeracy lessons during the week. (The number should be suitable for the age and ability of the children).
- In turn children select a card. Whatever it says the children have to work out the answer. For example if the card says - divide by 4, the children all divide the number of the week by 4. If you have individual whiteboards, all of the children can take part at the same time. Alternatively the individual who picked the card can work out the answer.
- This is a particularly quick activity which can always be to hand if your mental maths activity is not planned!!

Blockbusters

Resources

2 dice

2 sets of counters

Rules

- Throw the dice
- Make a number by adding or subtracting the 2 numbers shown on the dice
- Place a counter on the grid
- The winner is the player to get a line of counters across the grid

Extension

Use all four rules of number

Doubling Up

Resources

6x6 grid (see below)
 7-12 dice
 counters

Rules

- Take it in turn to throw the dice and then double the number and cover that square.
- The winner is either the person who gets four in a row or the one with the most covered after ten throws.

Stage 4 ideas...

As always, the sky's the limit

- triple or quadruple the number
- multiply each answer by a specific number to practice tables
- add 2 or 3 or 20 to every number
- change the numbers on the grid

14	22	20	22	14	18
22	20	16	18	24	16
18	14	18	22	14	20
24	16	22	20	16	24
24	20	14	20	18	22
16	18	24	16	24	14

Target

Resources

Pack of cards with picture cards removed

Rules

- Play this game as a whole class, in pairs or small groups
- Deal out 5 (or less to begin with) cards each and ask them to make the target number using any of the four operations
- Whoever makes the target gets 2 points
- They must explain how they did it
- If no-one can make it, 1 point is given to the pair with the closest answer

Operations

Resources

Pack of cards – number to suit ability

Rules

- Choose an operation eg +5, double, triple, etc.
- Turn over a card and carry out that operation.
- This can be played as a class, in small groups or in pairs.
- There does not have to be a winner.

Extension

Use more difficult operations and larger numbers

Ask the children to record and later explain their answers at the end.

Dice decisions

Resources

Dice decisions sheet

3 dice

coloured counters

Rules

- Give each pair the resources.
- Throw the three dice and using only + and -, make the numbers on the grid.
- The winner is the player who covers the most numbers.

Extension

Are there any numbers they cannot make?

- Give them a blank grid and allow them to make numbers of their own. What numbers do they choose and can they make them all?
- Make their own grid but use all four operations or 'odd' or 'even' or 'is a factor of', etc.

This can be adapted to suit the main maths you are teaching that week.

Dice Decisions

0	1	2	3
4	5	6	7
8	9	10	11

Dice Decisions (Gameboards)

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

0	1	2	3	4	5	6	7
8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23
24	25	26	27	28	29	30	31
32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47
48	49	50	51	52	53	54	55
56	57	58	59	60	61	62	63

10 in a row- Choosing and using operations

Resources

Deck of cards (All picture cards removed leaving numbers 1 – 10.)

Rules

- Children play game in pairs.
- Place 10 cards face up in a row. The remainder of the deck kept together face down.
- Take it in turns rolling a ten sided dice.
- Using the number that is displayed use combinations of cards to equal the number.
- Cards used to make the answer are collected and kept by each student and then replaced from the deck.
- The game continues until all cards have been used.
- You can use addition, subtraction, or if you are really clever order of operations and you may be able to use up to five cards!
- You need to explain how you make the answer, trying to gather more cards than your partner.

Variations

Use six sided dice.

Roll two dice making a two digit number as the target.

Odd or Even

Resources

Deck of cards between 2 (Kings, Jacks, Tens and Jokers removed)

Rules

- Two students place a deck of cards in front of them face down. The Queens represent zero and the Aces represent one.
- Students take it in turns taking one card at a time. Before they flip it over and read out the number they guess whether or not it is odd or even. [Children can draft a sheet with odd numbers on one side and even numbers on the other side and place a counter on their guess before flipping the card. This stops arguments about what was and wasn't said.]
- If the child guesses correctly he/she keeps the card. If he guessed incorrectly the card is given to his/her partner.
- Keep playing until the cards have all been used. The student with the most cards wins that game. Cards are shuffled and a new game begins.

Variations

Play the game with more than one card. The focus is not identifying odd and even numbers as children read larger numbers. The focus is correctly reading and saying 2,3,4,5 etc digit numbers.

Making Tens – Addition, extension to other operations

Resources

Deck of cards (All picture cards removed leaving numbers 1 – 9.)

Rules

- Children play game in pairs.
- Place 9 cards face up in three rows of three.
- The remainder of the deck are placed on top of the cards face up until all are gone leaving the nine piles of cards.
- Students take it in turns collecting two cards that when added together make ten. This continues until all cards are removed. Children need to say aloud the combinations as they collect the pairs.

Variations

Collect more than two cards to make ten, use subtraction and addition, roll a dice and use the number displayed as the target instead of ten, make 100 using the displayed cards as two digit numbers, create equations to make 100 using any operation, make 10 using mixed numbers eg. $4.7 + 5.3$, make 1 using decimals eg. $0.46 + 0.54$.

Highest / Lowest - Place value

Resources

For this activity each pair will need a deck of cards and two game boards that can be pre made or quickly drafted up on scrap paper. The game board needs to have enough room to lay three or more cards out side by side. It needs to be labelled units, tens, hundreds etc. Game boards can be made and laminated.

Rules

- Two students place a deck of cards in front of them face down. Remove the Kings, Jacks, Tens and Jokers. The Ace represents the number one and the Queen represents a zero. All other cards are face value.
- Students take it in turn selecting a card at a time and placing it in one of the columns on their game board. The objective is to make the biggest possible number. Once a student decides to place a card in a column it cannot be changed. Children need to read the number out as it is progressively being built. Teachers may wish to assess a student's ability to read numbers by asking him/her to press a number on the calculator and read it. If successful press another and so on. This will tell you if a child can read 2, 3, or more digit numbers and can help pair students appropriately. Allow children to play game one digit further than they can read so that learning can be extended.

Variations....smallest numbers, largest odd, using more or less than three columns. decimals.

Cover Up – Choosing and using operations

Resources

A deck of cards with all pictures removed.

Game board with the numbers 0 -20 displayed in a grid.

Counters

Rules

- Children play the game in pairs.
- Each child has 7 counters of the same colour. Their partner has a different colour.
- Children take it in turns taking two cards at a time from the top of the deck and add or subtract the numbers to make an answer from 0 - 20. One of their seven counters is placed on that number. The objective is to get rid of all counters first. If a student lands on top of number that has their partner's counter on it they take the place and send the counter back to their partner. Students can have more than one counter of their own on the same number but if their opponent lands on that number all counters are sent back.

Variations....use three cards, use dice instead of cards, allow any operation, simplify the game by using a 0 – 12 board and a cards 1 to 6 or a six sided dice.

More / less / the same - Place value

Resources

Deck of cards per group - remove picture cards and jokers.

Rules

- Card game for groups of four. Deal each child 6 cards. Cards left placed in the middle and turn the top one over. Taking turns the children place a card down according to: same number, one more or one less, two more or two less, double the number, half the number.
- The child must verbalise the choice they have made to discard and why. If a card cannot be discarded then a card is picked up from the deck.
- First to discard all their cards wins the game.

Variations

Discard two or more cards that add up to the card displayed.

Include the Joker with the value of zero.

Include the picture cards with the values Jack 11 Queen 12 King 13

High Card – Addition

Resources

Per pair: deck of cards. Remove the Kings, Jacks, and Jokers.

Rules

- The Ace represents the number one and the Queen represents a zero. All other cards are face value.
- Children share out all the cards and place their cards in front of them in one pile.
- Player one turns over his/her top two cards and adds them up ie. 7 and 10 = 17. Player two then turns over his/her top two cards hoping to get a higher score than player one. Whoever has the higher score takes all 4 cards and places them at the bottom of their pack. Play continues until teacher says stop or all cards are used. Player with most cards wins.

Variations

Turn over three cards, Subtract, turn over three cards and add and subtract between cards to make greatest total. Make the largest two/three digit number, multiply

Hit 100 anything goes – Probability, choosing and using operations

Resources

100 number board, two transparent counters and full deck of cards with Jokers included.

Rules

- All cards have face value with the Ace representing 1 and the picture cards representing 10. The Joker is wild and can represent any number from 1 to 10.
- The game starts with one student dealing while the other moves their counter. The objective is to reach exactly 100 in the least number of cards possible. Any operation may be used. Once a student hits exactly 100 the cards used are counted and then placed back in the deck and reshuffled. The roles are reversed and the challenge is for the second student playing to reach 100 in fewer cards.
- Students must ask for the card before it is dealt. If the card is dealt before it is asked for it can be rejected. This eliminates rushing a student to make a decision.
- When dealing cards they need to be placed in rows of 5 or 6 so that decisions on which operation to use, can be based on what cards have already been dealt.

Make my number - Choosing and using operations / Equations

Resources

Deck of cards with Jokers included but all picture cards removed.

Rules

- Students can play in pairs or groups of four.
- All cards have face value with the Ace representing 1. The Joker is wild and can represent any number from 1 to 10.
- Six cards are dealt face up between two or more students. The seventh card or the next card on the deck is the target number. Students are challenged to make as many equations as possible using combinations of the six cards displayed to equal the target number. They must write the equations down. Encourage students to begin using simple equations to make the target number and then extend to using more than one operation, brackets, order of operations, negative numbers, square root, decimal notation etc. A scoring system can be used earning extra points for using more cards in the equations or using operations other than addition and subtraction. Place a time limit of perhaps 3 or 4 minutes per game. Students tally their points to see how they went. Discard these cards and play again using the next seven numbers. It may be worth modelling this activity with the whole class from the front and everybody using the same set of numbers.

Ten Points

Resources

25-30 counters for each group, 10 points Scoresheet, **BLM** included, 10 sided dice.

Rules

- The object of the game is to get the highest 3 digit number in each of the five places on the scoresheet.
- Students in turn roll the dice and every player writes that number somewhere on their scoresheet. After 15 rolls, everyone will have five 3 digit numbers recorded. Each player in turn reads aloud their number one. The player with the highest number takes a counter from the pile. If two or more students have the same highest number, they all take a counter. Repeat this process for numbers 2-5. The first player to collect 10 counters is the winner.

Variations:

Make a new scoresheet for 4, 5 or 6 digit numbers.

99 or Bust

Resources

A calculator and 10 sided dice per group of 3-4 students.

Rules

- Players take turns to roll the dice and key in either the number rolled or ten times that number. For example, if a 3 is rolled, the player may enter a 3 or 30. Each new number is added to the existing total. After five rounds, the player with the total closest to 99, without going over 99 is the winner.

Variation:

Change the total required, or the number of rolls. Play 999 or bust by giving the option of multiplying by 10 or 100.

Largest Number Wins

Resources

A six sided dice marked +1, +10, +100, -1, -10, -100 for each group of 3-4 students. Paper and pencils.

Rules

- Each player starts with 500 points.
- Players in turn roll the dice and add or subtract the amount shown on the dice. Each player has four rolls of the dice and records his or her cumulative tally.
- The winner is the player with the largest number.

Resource Sheets

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99

101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

10 Point Scorecard

Game 1

1.			
2.			
3.			
4.			
5.			

Game 2

1.			
2.			
3.			
4.			
5.			

Game 3

1.			
2.			
3.			
4.			
5.			

Game 4

1.			
2.			
3.			
4.			
5.			

Game 5

1.			
2.			
3.			
4.			
5.			

Game 6

1.			
2.			
3.			
4.			
5.			

0	1	2
3	4	5
6	7	8
9	10	

0	1	2
3	4	5
6	7	8
9	10	

Largest Number Wins score sheet

Start	Instruction	500
Roll 1		
Roll 2		
Roll 3		
Roll 4		
Roll 5		

Largest Number Wins score sheet

Start	Instruction	500
Roll 1		
Roll 2		
Roll 3		
Roll 4		
Roll 5		

Start with four recording sheet

Turn	Instruction	Number
4 digit number		
Roll 1		
Roll 2		
Roll 3		
Roll 4		

Start with four recording sheet

Turn	Instruction	Number
4 digit number		
Roll 1		
Roll 2		
Roll 3		
Roll 4		