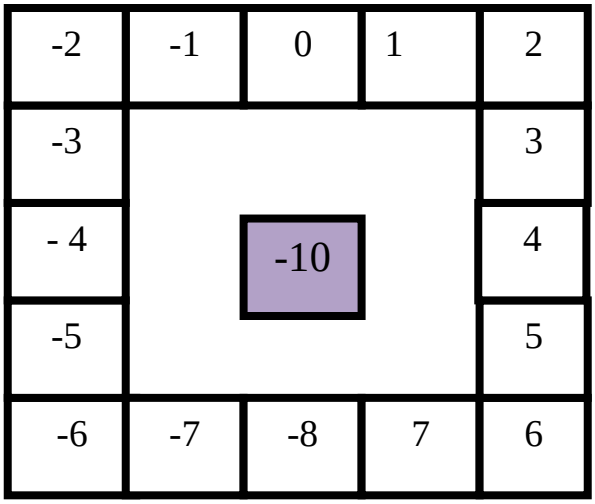
Activities on Directed Numbers KS3 Non-Calculator

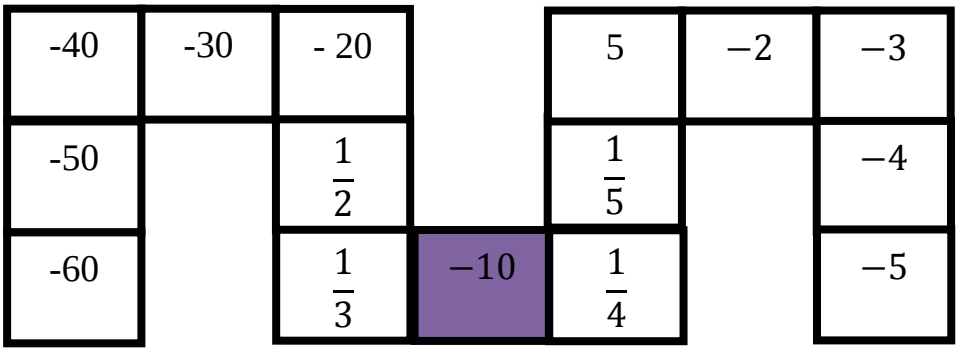
1. The aim of this game is to score a goal.
   A goal is scored if you can combine two or more of the outside numbers to get the number, -10, at the center by using addition or subtraction or a combination of the two.
   Each number may only be used once for each try to score a goal.
   For examaple: - 2 – 8 = -10, 2 – (-1) – 6 + (- 3) + (- 4) = -10
   Each goal scored is worth 5 points and each miss is worth -2 points.
   If a goal is scored by using 5 or more of the numbers, you gain 10points.
   The game is played in pairs or two teams of two. Each team has one go at a time and the other team checks the answer and keeps their score.
   The winner is the one with the highest score.
   Decide on a time limit if you wish, say 5 to 10 minutes.
   The two teams with the highest scores challenge each other while the others challenge a different team.



2. This game is similar to the game in question 1 but you **must** use **multiplication at least once** and you have the option of also using addition and/or subtraction.

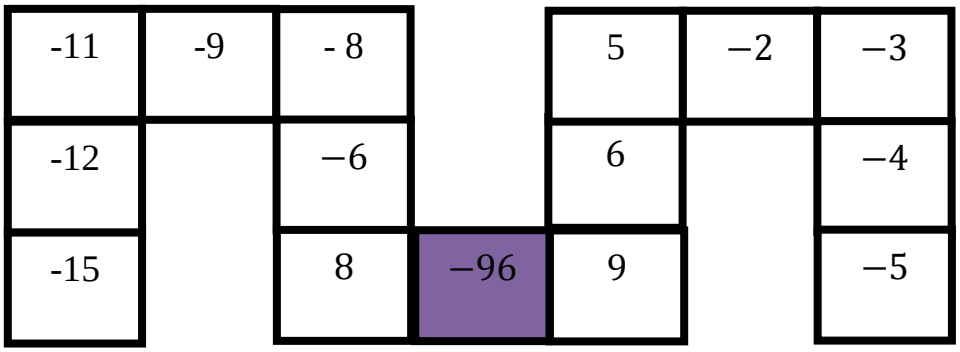
   For example: $\frac{1}{2} \times (-20) = -10$, $\frac{1}{4} \times (-20) + \frac{1}{2} \times \frac{1}{5} \times (-50)$

   $= -5 + (-5) = -10$



3. The rules of this game are the same as those for question 2.

   For example: - 4 x 3 x 8 = - 96, (- 9) x12 + (-3)(-4) = -108 + 12= -96



These are provided for photocopying and cutting up.

-2	-1	0	1	2
-3				3
- 4		-10		4
-5				5
-6	-7	-8	7	6

-2	-1	0	1	2
-3				3
- 4		-10		4
-5				5
-6	-7	-8	7	6

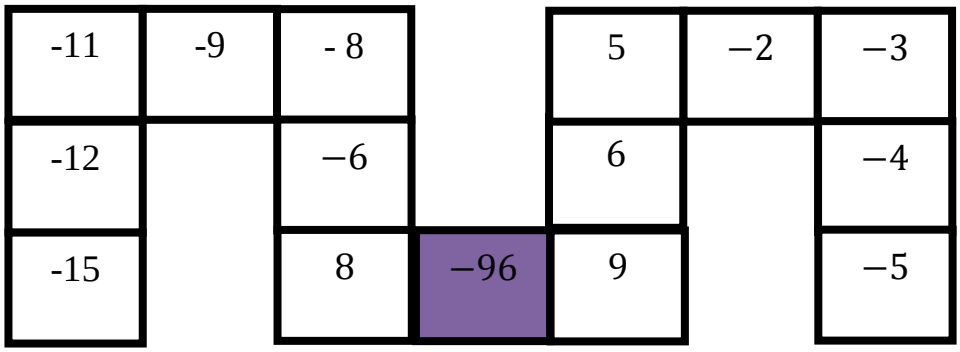
-2	-1	0	1	2
-3				3
- 4		-10		4
-5				5
-6	-7	-8	7	6

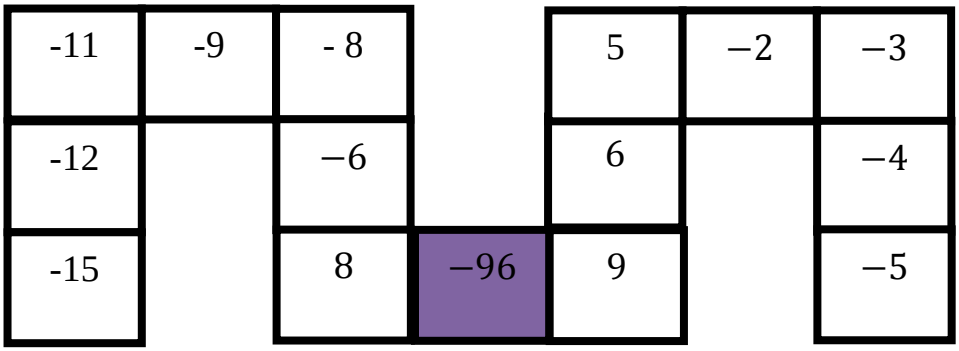
-2	-1	0	1	2
-3				3
- 4		-10		4
-5				5
-6	-7	-8	7	6

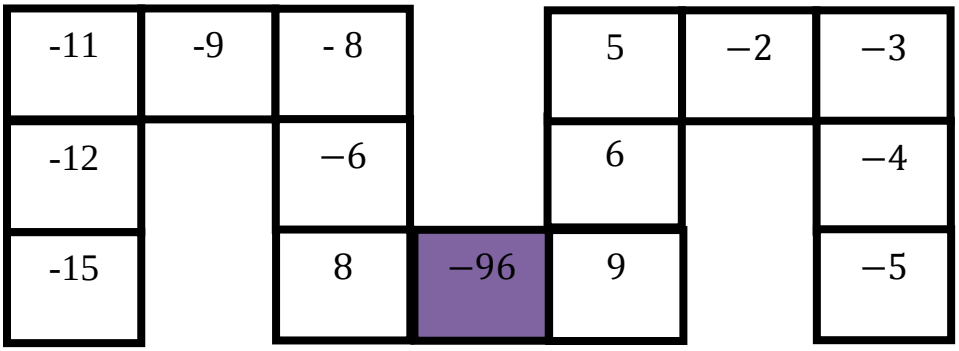
-40	-30	- 20		5	-2	-3
-50		$\frac{1}{2}$		$\frac{1}{5}$		-4
-60		$\frac{1}{3}$	-10	$\frac{1}{4}$		-5

-40	-30	- 20		5	-2	-3
-50		$\frac{1}{2}$		$\frac{1}{5}$		-4
-60		$\frac{1}{3}$	-10	$\frac{1}{4}$		-5

-40	-30	- 20		5	-2	-3
-50		$\frac{1}{2}$		$\frac{1}{5}$		-4
-60		$\frac{1}{3}$	-10	$\frac{1}{4}$		-5


-11
-9
- 8
5
−2
−3
-12
−6
6
−4
-15
8
−96
9
−5


-11
-9
- 8
5
−2
−3
-12
−6
6
−4
-15
8
−96
9
−5


-11
-9
- 8
5
−2
−3
-12
−6
6
−4
-15
8
−96
9
−5

There are far too many possible ways to score a goal!

HERE ARE SOME POSSIBILITIES:

1. - 3 – 7 = -10 or written as(– 3) + (-7)
   - 4 – 6 = -10
   - 5 - 6 + 1 = -10
   - 3 – 8 +1 = -10
   - 3 – 8 – (-1) = -10
   - 5 – 7 + 2 = -10
   - 6 – 7 + 3 = -10
   - 8 – 7 + 5 = -10
   - 8 – 6 +4 = -10
   - 1 + 0 + 1 – 2 + 2 +3 – 3 +5 – 5 - 7 + 7 -6 - 4 = -10
   - 5 – 6 – (-1) = -10

2. – 2 +(– 3)+(– 5) = -10, - 5 – 4 – 1 = -10, - 8 – 5 –(-3) = -10

   $\frac{1}{3} \times (-30) = -10$, $\frac{1}{4} \times (-40) = -10$, $\frac{1}{5} \times (-50) = -10$

   $\frac{1}{2} \times \frac{1}{3} \times (-60) = -10$, $\frac{1}{2} \times \frac{1}{4} \times (-40) - 5 = -10$

   $\frac{1}{2} \times \frac{1}{3} \times (-30) + \frac{1}{4} \times (-20) = -10$

3. $-12 \times 8 = -96$, $(-6) \times 5 + 6 \times (-11)$, $6(-11 - 5)$,

   $-12 + (-11) + (-9) + (-6) + (-4) - (9 \times 6) = -96$

   $(-2)(6)(8)$, $(-2)(-6)(-8)$, $(-4)(-3)(-8)$, $(8)(-9) - (-6)(-4)$

   $(-11)(9) - (-3)$, $(-6)(-3)(-2) - (-12)(-5)$,

   I hope you find this useful.