

TARGET GAME



Combine the two given numbers using one of the operations addition +, subtraction -, or multiplication x, and each number once and only once, to get as close to the target number as possible.

1. Target -10 with (-3) and (-5);
2. Target -60 with (-6) and (+9);
3. Target +45 with (-5) and (-9);
4. Target the minimum number with (-9) and (+2).

Example: for -7 and +9,

use $(+9) - (-7) = +16$ to hit the maximum and $(+9) \times (-7) = (-63)$ to hit the minimum.

The nearest to -35 is $(-7) - (+9) = (-16)$ and the nearest to 0 is $(+9) + (-7) = (+2)$.

0	+1	+2	+3	+4
+5	+6	+7	+8	+9
-1	-2	-3	-4	-5
-6	-7	-8	-9	MINIMUM
NEAREST TO -10	NEAREST TO +75	NEAREST TO 0	NEAREST TO -7	MAXIMUM
NEAREST TO -35	NEAREST TO -60	NEAREST TO +15	NEAREST TO +45	NEAREST TO +8

TARGET GAME RULES

The aim is to get as close to the target as possible. Players score 5 points if they hit the target. If nobody hits the target players getting nearest to the target score 2 points.

This game can be played by a whole class with the teacher deciding on the best answer. Or it can be played by any number of players when they need to agree between themselves on the best answer for each round.

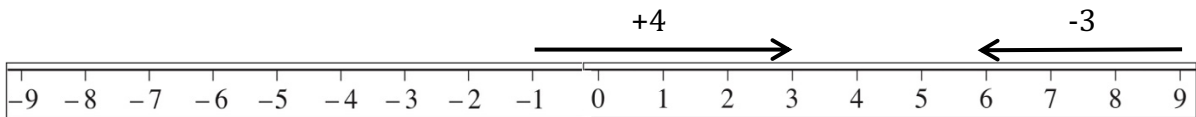
Cut out the cards on page 2. Mix up the numbered cards and place them face down. Also mix the target cards and place them face down.

Turn over the top two number cards and one target card. All the players must write down the two numbers and choose an operation to combine them to get as near to the target as possible. Then the players check their answers and the scores are recorded. The first player to reach 20 points wins the game.

HELP

Use of a number line to carry out the operations.

Think of numbers defined by both LENGTH and DIRECTION
positive numbers with a direction to the right
and negative numbers with a direction to the left.



ADDITION

Start at 1st number. Move distance and direction given by 2nd number.

$$\begin{aligned}1 + (+4) &= +3 \\ -1 + (-4) &= -5 \\ +9 + (-3) &= +6 \\ +9 + (+3) &= +12\end{aligned}$$

SUBTRACTION

Reverse the direction of the number

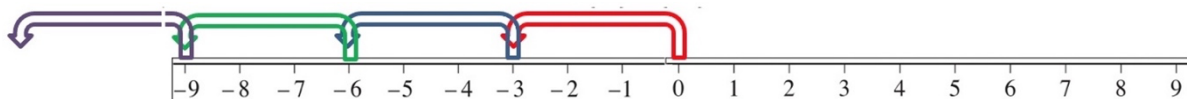
$$\begin{aligned}-1 - (+4) &= -5 \\ -1 - (-3) &= +2 \\ +9 - (+4) &= +5 \\ +9 - (-3) &= +12\end{aligned}$$

MULTIPLICATION

Start at 0.

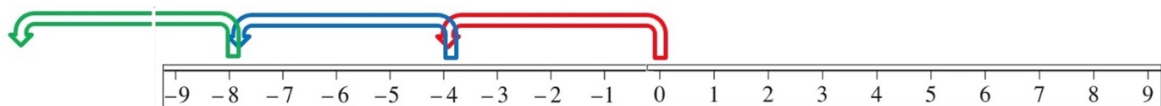
Move the distance given by one number the number of times given by the other in the direction of that number if the other number is positive knowing that the number line extends infinitely far in both directions

$$(-3) \times (+4) = -12$$



reversing the direction if the other number is negative.

$$(+4) \times (-3) = -12$$



DIVISION

Work from the product: $(-3) \times (+4) = -12$

$$\begin{aligned}\text{so } (-12) \div (-3) &= (+4) \\ (-12) \div (+4) &= (-3)\end{aligned}$$

This target game can be played with the rule that all numbers must be integers. You can vary the rules so that players can get nearer to the target using division of integers that give fractions as answers.

FRACTIONS - THE SAME RULES APPLY

$$\left(+\frac{3}{4}\right) \times (+4) = (+3) \quad \Leftrightarrow \quad (+3) \div (+4) = \left(+\frac{3}{4}\right)$$

$$\left(+\frac{3}{4}\right) \times (-4) = (-3) \quad \Leftrightarrow \quad (-3) \div (-4) = \left(+\frac{3}{4}\right)$$












$$\left(-\frac{3}{4}\right) \times (+4) = (-3) \quad \Leftrightarrow \quad (-3) \div (+4) = \left(-\frac{3}{4}\right)$$

$$\left(-\frac{3}{4}\right) \times (-4) = (+3) \quad \Leftrightarrow \quad (+3) \div (-4) = \left(-\frac{3}{4}\right)$$

NEXT

An advanced version of the game could be played with 3 numbers so that there are more cases to consider.

RULES FOR THE TARGET GAME

0	+1	+2	+3	+4
+5	+6	+7	+8	+9
-1	-2	-3	-4	-5
-6	-7	-8	-9	 MINIMUM
 NEAREST TO -10	 NEAREST TO +75	 NEAREST TO 0	 NEAREST TO -7	 MAXIMUM
 NEAREST TO -35	 NEAREST TO -60	 NEAREST TO +15	 NEAREST TO +45	 NEAREST TO +8

FOR EACH GAME YOU NEED TO CUT OUT AND MIX ONE SET OF CARDS.

Use an envelope for the integer cards and another envelope for the targets.

For each round of the game pick 2 integer cards at random and one target card.

The aim is to get as close to the target as possible. Players score 5 points if they hit the target.

If nobody hits the target players getting nearest to the target score 2 points.












Mix up the numbered cards and place them face down.

Mix the target cards and place them face down.

Turn over the top two number cards and one target card.

All the players must write down the two numbers and choose an operation to combine them to get as near to the target as possible. Then check your answers with each other.

Agree on the points to be awarded and record the scores. The first player to reach 20 points wins the game.

0	+1	+2	+3	+4
+5	+6	+7	+8	+9
-1	-2	-3	-4	-5
-6	-7	-8	-9	 MINIMUM
 NEAREST TO -10	 NEAREST TO +75	 NEAREST TO 0	 NEAREST TO -7	 MAXIMUM
 NEAREST TO -35	 NEAREST TO -60	 NEAREST TO +15	 NEAREST TO +45	 NEAREST TO +8