Magic Squares with Rational Numbers

Your Challenge

➤ **Complete the magic squares.**

A magic square has the same sum in each row, column, and diagonal. Each number in the magic square can be used only once. The common sum in each puzzle is called the *magic number*.

1

		-10
-11.5	-10.5	-9.5

Magic number: _____

2

		$2\frac{1}{2}$
$\frac{1}{4}$		$3\frac{1}{4}$
	$4\frac{3}{4}$	$-\frac{1}{2}$

Magic number: _____

Magic Squares with Rational Numbers

3

		19.25
2.75		
8.25	35.75	

Magic number: 41.25

4 Try creating your own magic square that uses both positive and negative rational numbers.

Magic number: _____

Under the Sea

Your Challenge

➤ **Scientists are collecting water samples at different ocean depths. They are using one submersible vehicle for their expedition.**

- Two scientists may be in the vehicle at a time. There are three scientists, and each must collect samples from at least two of the depths. It takes $\frac{1}{2}$ hour at the surface to exchange scientists.
- They expect the collection of samples at each depth to take $1\frac{1}{2}$ hours.
- The submersible can spend only 10 hours in the water per day.
- They will collect samples from 4 different depths. The depths are:
  - −0.5 kilometer
  - −1.2 kilometers
  - −2.25 kilometers
  - −3.5 kilometers
- The submersible can descend at a rate of 2.5 kilometers per hour.
- The submersible can ascend at a rate of 4.5 kilometers per hour.
- A formula that may help you is the distance formula: Distance $=$ rate $\times$ time.

➤ **On the Recording Sheet, create a plan for the dives that will take the least amount of time possible.**

- Include calculations that show how long it will take the submersible to move between sample collection points and the distance the submersible will travel.
- Record depths below sea level as negative numbers.
- Record descents as negative values and ascents as positive values.
- Describe which scientists are on board the submersible at a given time.
- Can the collection of all samples be completed in 10 hours or less?

Name:

Under the Sea

RECORDING SHEET