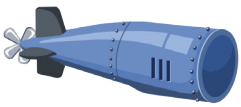
Read and write algebraic expressions in which letters stand for numbers. Identify parts of an expression such as: constant, variable, terms, coefficients, like terms, unlike terms,sum, product in the context of an algebraic expression. Compare and contrast variables and constants, like and unlike terms. CCSS.MATH.CONTENT.6.EE.A.2 , 6.EE.A.2.B | G6M4C19E1

Some parts of the submarine are damaged after the expedition. Let's fix them.

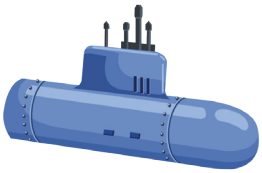
1 The cost of repairing each dent in the two parts of the submarine, A and B, is $q and $r, respectively. If Part A has 7 dents and Part B has 5 dents, calculate the total cost of repairing the dents. Write your answer in the boxes given below.

Part A



Cost of repairing each dent = $q

Part B



Cost to repair each dent = $r

Total cost of repairing = $ ☐ q + ☐ r

2 The engine room sensors contain 3 batteries and the control room sensors contain 5 batteries. If it costs $c to replace each battery, then match the statements in Column A with their correct values in Column B.

Control room

Column A	Column B
Cost of replacing batteries in the engine room	$8 c
Cost of replacing batteries in control room	$3 c
Cost of replacing all batteries in both the rooms	$5 c

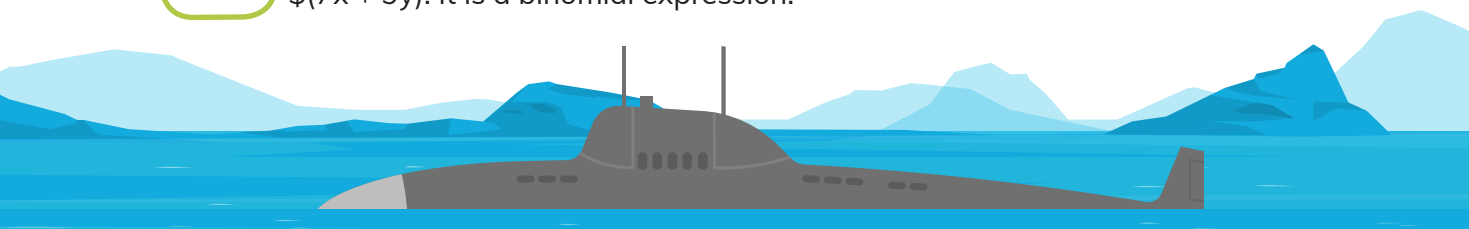
Engine room

3 The cost of repairing the sonar and laser equipment in the submarine is $(5x + 6y) and $(2x + 3y), respectively. Calculate the total cost and check the incorrect statement(s) about the expression for the total cost.

☐ Total cost to repair all the equipment = $(7x + 9y). It is a monomial expression.

☐ Total cost to repair all the equipment = $(7x + 9y). It is a binomial expression.

☐ Total cost to repair all the equipment = $(7x + 9y). It is a trinomial expression.



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4 The different crew members on the submarine and their salaries are given below. Calculate their total salary. Write your answers in the boxes given below.

Type of crew	Number of crew members	Salary of 1 member	Total salary of each type of crew members (in $)
Inspection crew	10	$t	
Maintenance crew	12	$m	
Repairment crew	25	$r	

Total salary of all crew members = $ ☐☐ t + ☐☐ m + ☐☐ r

A Some tiny holes in the fuel tanks of the submarine are found. If the cost of repairing each hole is $j, solve the following equation and find the value of j. Write your answers in the boxes given below.

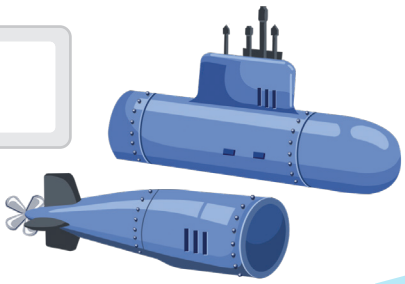
Hint: First, add the constants using the addition property of equality and divide by 2 to get the answer.

The equation is 2j - 15 = 35.

On solving the equation, we get:

☐☐ = 3 + ☐☐ = ☐☐

⇒ Cost of repairing 1 hole, ☐ = $ ☐☐



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The breakage of some parts led to oil spillage from the submarine. Let's take a look at this.

1 The submarine uses z gal of fuel, and the crew consumes y lb of food everyday. If the process of checking the spillage lasted for 7 days, then calculate the total amount of fuel and food consumed. Write your answers in the boxes given below.

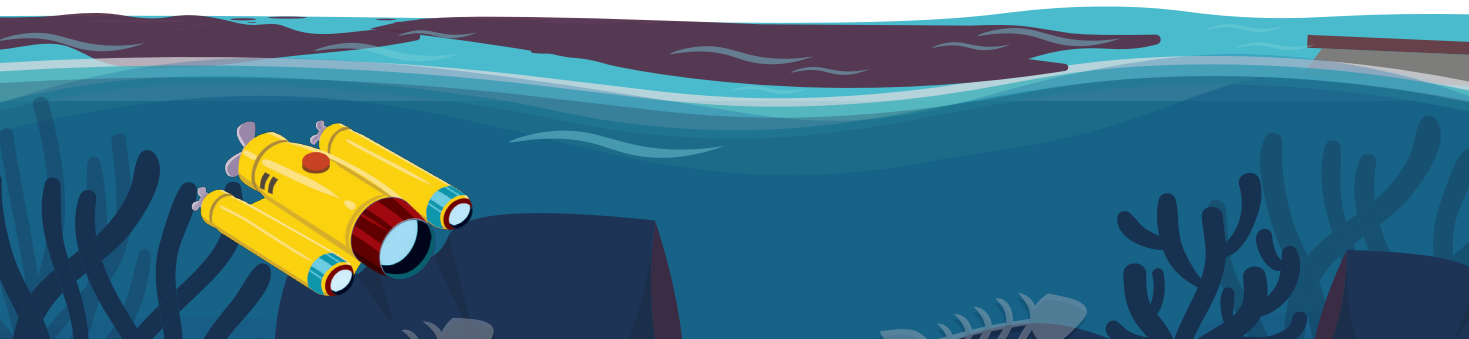
Amount of fuel used in 7 days = ☐ × ☐ = ☐ ☐ gal

Amount of food consumed in 7 days by the crew = ☐ × ☐ = ☐ ☐ lb

Total amount of fuel and food materials consumed in 7 days = ☐ z gal + ☐ y lb

2 The time spent by the crew (in h) to check the spillage is given below. Evaluate the number of terms in each expression. Match the number of terms with their correct type of expression.

Expression	Number of terms in the expression	Type of expression
Day 1: pt + qt + pt	4	Monomial
Day 2: pt + pt + pt	2	Polynomial
Day 3: pt + qt + rt + at	1	Binomial
Day 4: pt + qt + rt	3	Trinomial



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3 From each backup and fuel tank, p gal of oil is spilled. 6q gal of oil is spilled from the main storage tank. If the submarine has 3 backup and 4 fuel tanks, then simplify the expression to find the total amount of oil spilled. Circle the correct type of expression obtained.

Total amount of oil spilled from the submarine = ☐ p + ☐☐ gal

The expression for the total amount of oil spilled is ____.

binomial trinomial monomial

A The total area surveyed for spillage is given by the equation 7a - 15 = 48, where "a" denotes the area of the oil spillage (in sq mi). Calculate the value of "a" and write your answers in the boxes given below.

Hint: First, remove the constants on both sides of the equation and then divide both side by 7 to find "a".

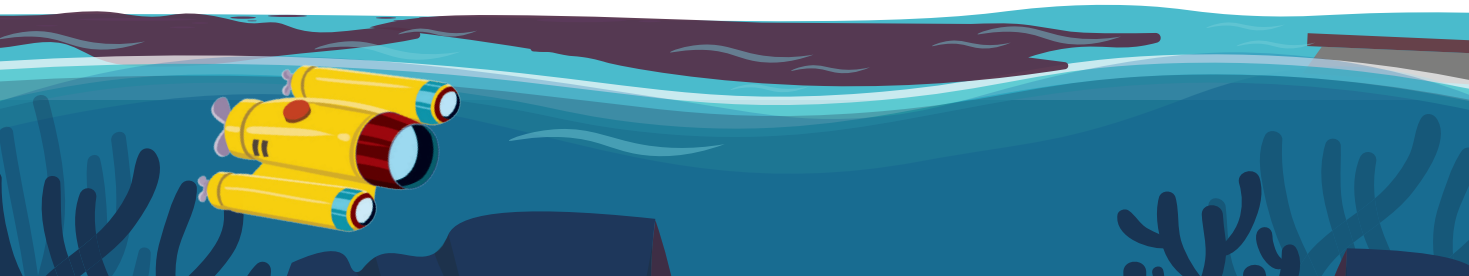
On solving the equation, we get:

☐ a - ☐☐ ☐ ☐☐ = 48 + ☐☐

⇒ ☐ a = ☐☐

On dividing both sides of the equation by 7, we get:

⇒ ☐ = ☐☐ ÷ ☐ = ☐ sq mi



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To understand the effects of oil spillage on marine life, the crew needs to build a battery-operated vehicle. Help them plan a budget for the vehicle.

Step 1: The crew first makes the body of the vehicle from the given raw materials. Follow the guidelines and fill in the boxes given below to find the total cost of raw materials.

Guidelines:

- To make the body of the vehicle, aluminum, copper and steel must be used.
- The weight of aluminum (in tons) must be between 70 to 80 (both inclusive).
- The weight of copper (in tons) must be between 40 to 50 (both inclusive).
- The weight of steel (in tons) must be between 25 to 45 (both inclusive). Write your answer in the boxes given below.

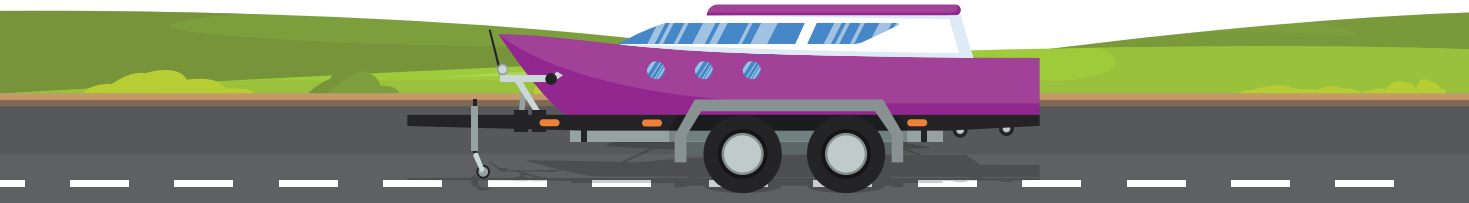
Chosen weight of aluminum = ☐☐ tons

Chosen weight of copper = ☐☐ tons

Chosen weight of steel = ☐☐ tons

Raw material	Cost per ton	Total cost of each type of raw material
Aluminum	$a	$ ☐☐☐
Copper	$c	$ ☐☐☐
Steel	$s	$ ☐☐☐

Total cost of raw materials (in $) = ☐☐ a + ☐☐ c + ☐☐ s



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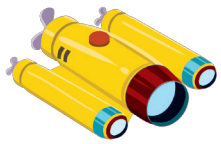
Step 2: The vehicle is to be fitted with batteries, cameras, and lights. Follow the guidelines and write the total cost of these devices in the boxes given below.

Guidelines:

- Choose a number between 6 to 12 for the number of mini-cameras (both inclusive).
- Choose a number between 1 to 9 for the number of lights (both inclusive).
- Choose a number between 30 to 50 for the number of batteries (both inclusive).

Device	Cost per piece	Chosen number of each device	Total cost of each type of device
Camera	$8a		$
Light	$5c		$
Battery	$7s		$

Step 3: We know the cost of the devices and raw materials needed for the body of the vehicle, calculate the total budget to build the entire vehicle. Write your answer in the boxes given below.



Hint: Add the total cost of the raw materials to the total cost of each device.

Total budget to build the entire vehicle (in $)

= a + c + s

Thank you! With your help, the crew is able to measure the effects of oil spillage on marine life.