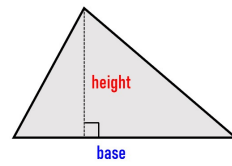
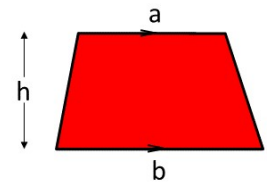


## Coding Practice Questions

1. Write a routine in **python** that does the following:
  - Asks the user to choose “triangle” or “trapezium”
  - Asks the user to input the appropriate lengths to calculate the area of the chosen shape.
  - Calculates the area of the shape
  - Outputs the value to the user.



$$A = \frac{1}{2}bh$$



$$\text{Area} = \frac{1}{2}(a + b) \times h$$

2. You may use the following list in this question:

```

    [0]  [1]  [2]  [3]  [4]  [5]  [6]  [7]  [8]
Arr = [5,  8, 11, 22, 13, 16,  4, 17, 34]

```

In python write a routine that does the following.

- Checks every element in the list (`arr`)
- Counts the number of elements that have a value between 10 & 20.
- Outputs the result to the user.

The expected output for this routine using the list `arr` is 4

3. At sea level, water boils at  $100^{\circ}\text{C}$ . For every 300m above sea level, the boiling point is lowered by  $1^{\circ}\text{C}$ .

Using python, write a routine that does the following:

- Asks the user to input an altitude e.g. (8,849m = The height of mount Everest's peak)
- Rounds this number to the nearest 300m (e.g. 8700)
- Calculates the temperature at which water boils at this altitude. (e.g. 71°C)
- Outputs this result

4. On a commercial flight to New York, the average prices of tickets are shown in the table:

Economy	£795
First-Class	£2,980

The airline estimates that, on average, **each passenger** spends £5.33 on food and drinks purchases while on-board.

Write a routine in python that does the following:

- Asks the user to input the number of first-class passengers
- Asks the user to input the number of economy passengers
- Calculates the total revenue (income) from the sale of tickets
- Calculates the expected revenue from food and drinks purchases during the flight
- Outputs the total expected revenue.

5. A chat room stores the usernames of its active members on a list called `users`.

```
users = ["Bob", "Tim", "Ann", "Jen"]
```

You will write a routine that will display a message to new users allowing them to select a valid username.

Write a routine that does the following:

- Asks the user to input a username
- The routine should keep asking the user to enter a username until the following conditions are met.
  - The username is longer than 5 characters
  - The username is not already in use (i.e. not already in the list)
- Once these conditions are met, the routine should display a message to the user to tell them they logged in successfully.