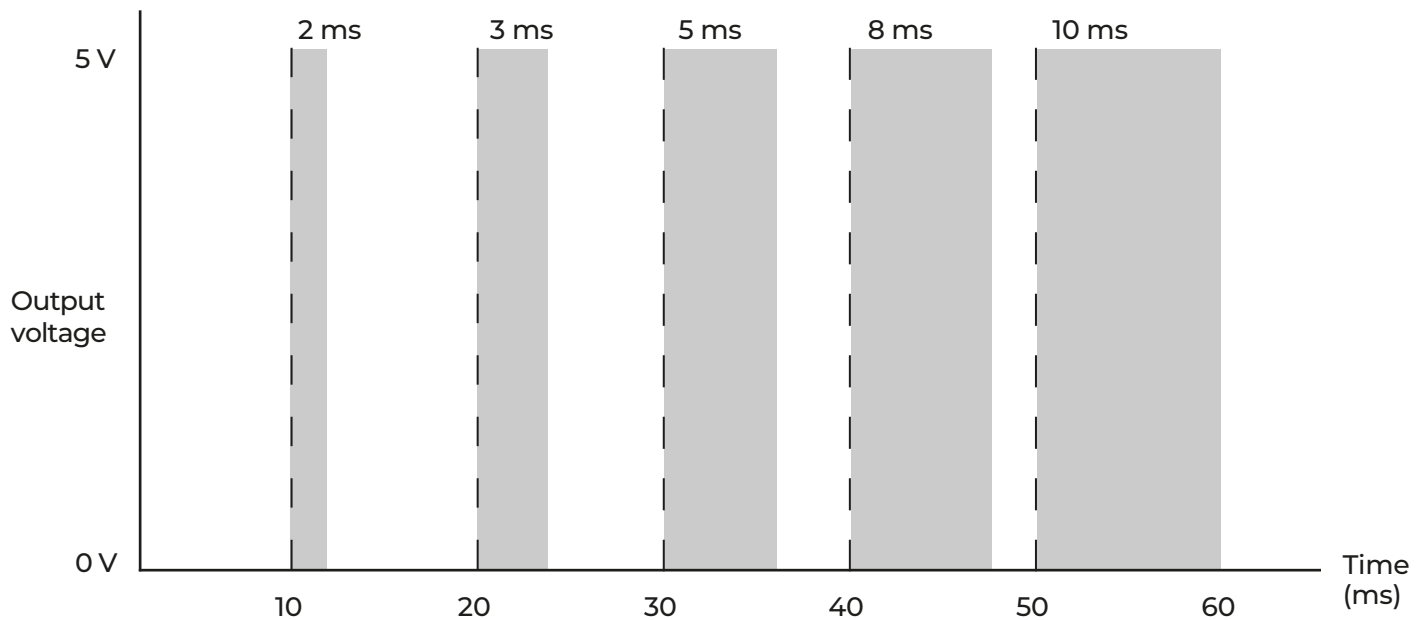# Activity sheet 8

What is the frequency of this pulse width modulation (PWM) signal?

Calculate the % duty cycle during each period, and the average voltage this produces each time. Write your answers in each time period on the chart above. Sketch a line to show how the average voltage changes.

What duty cycle would be needed to create the following average voltages?

1.2 V: 3.5 V: 4.8 V:

This controller has 8-bit resolution (0 to 255). What is the resolution of the PWM output, in volts?

Activity sheet 9

9a. LEDs

Sketch and label graphs to show the pulse width modulation (PWM) signal to each LED colour to display red, amber then green.

R

G

B

9b. Tool head motor

Calculate the duty cycle to 2 decimal places (2dp) and the pulse width to 4 decimal places (4dp).

Speed rpm	Duty cycle % (2dp)	Pulse width ms (4dp)
1000		
2000		
5000		
8000		
11000		

9c. Servo motor

Calculate the pulse width for each angle of rotation:

Angle	Pulse width
10°	
15°	
40°	
110°	
165°	

The maximum theoretical resolution is: