Do not write outside the box

0 3 **Figure 5** shows an ice skater, Skater **A**.

Figure 5

0 3 . 1 Write down the equation that links mass, momentum and velocity.

[1 mark]

_____

0 3 . 2 Skater **A** travels with a velocity of 3.2 m/s and has a momentum of 200 kg m/s

Calculate the mass of Skater **A**.

[3 marks]

_____

_____

Mass = _____ kg

Do not write outside the box

0 3 . 3 Skater **A** bumps into another skater, Skater **B**. Skater **B** is stationary.

The skaters move off together in a straight line.

Explain what happens to the velocity of each of the skaters.

Use the idea of conservation of momentum.

[3 marks]

7

Turn over for the next question

Question	Answers	Extra information	Mark	AO / Spec. Ref.
03.1	momentum = mass × velocity	allow p = mv	1	AO1 6.5.5.1
03.2		an answer of 63 (kg) scores **3** marks		AO2 6.5.5.1
	200 = m × 3.2		1	
	$m = \frac{200}{3.2}$		1	
	m = 63 (kg)	allow 62.5 (kg)	1	
03.3	(total) momentum before (collision) = (total) momentum after (collision)		1	AO1 6.5.5.2
	either momentum of skater A decreases and momentum of skater B increases	allow (total) momentum is shared between skater A and skater B	1	
	velocity of skater A decreases and velocity of Skater B increases		1	
	or momentum of skater A decreases and so velocity of skater A decreases (1) momentum of skater B increases and so velocity of skater B increases (1)			
Total			**7**	