Question number	Answer	Notes	Marks
4 (a) (i)	weight = mass × gravitational field strength;	allow rearrangements and standard symbols e.g. W = m × *g* ignore 'gravity' for *g*	1
(ii)	substitution or rearrangement; evaluation; e.g. 520 = mass × 10 OR mass = W / g (mass =) 52 (kg)	 allow *g* = 9.8, 9.81 allow 53.1, 53.0, 53	2
(b) (i)	evidence of counting squares to find area; number of squares in range 37-42; evaluation of area of one square; evaluation of total area; e.g. dots seen in each square in diagram number of squares = 39 area of one square = (2 × 2) = 4 cm^2 total area = (4 × 39) = 156 cm^2	allow attempt to find area by splitting into rectangles / triangles allow if 2 × 2 seen in working allow ecf from incorrect number of squares allow 148-168	4
(ii)	pressure = force / area;	allow standard symbols and rearrangements e.g. p = F / A	1
(iii)	dimensionally correct substitution; evidence of doubling area or halving pressure to account for both feet; evaluation with matching unit; e.g. (pressure =) 520 / 156 area = 156 × 2 OR pressure = 3.2 ÷ 2 (pressure =) 1.7 N/cm^2	allow ecf from (b)(i) allow N/cm^2, N/m^2 or Pa if no marks awarded for calculation allow 1 mark if valid unit for pressure given allow 1.5-1.8 N/cm^2 allow 15 000-18 000 N/m^2	3

Total for Question 4 = 11 marks

Question number	Answer	Notes	Marks
7 (a)	24 (kPa);		1
(b)	any three from: MP1. reading increases / pressure increases; MP2. reading doubles / pressure doubles/ reading is 48 kPa; MP3. (because) air particles collide with walls more **often**; MP4. (because) pressure × volume is constant;	 scores first 2 marks allow quoted formula allow (because) pressure is inversely proportional to volume	3
(c) (i)	{speed / velocity / KE} of particles decreases;	allow less frequent collisions ignore 'motion / movement decreases'	1
(ii)	pressure decreases; particles collide with walls less often; particles collide with less force;	 allow particles colliding less hard	3

Total for Question 7 = 8 marks