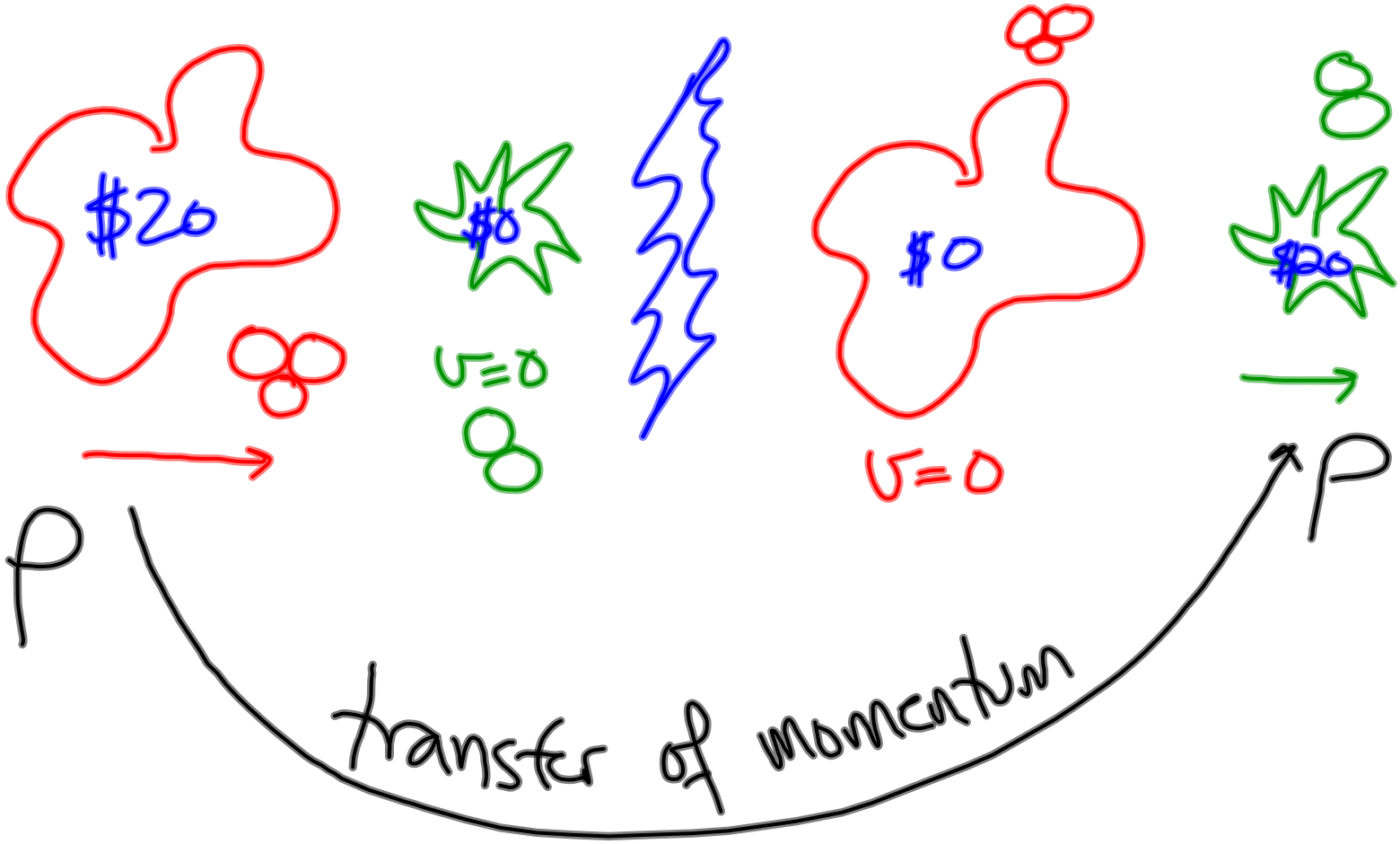

$20
$0
v=0
$0
v=0
$20
p
transfer of momentum
p

1a] (1a) $v = 2.3\ m/s$ $m = 6.2\ kg$

(1b) p

(2) $p = m \cdot v$

(3) $p = 6.2\ kg \cdot 2.3\ m/s$

(4) $p = 6.2 \cdot 2.3$

$= \boxed{14.26\ \frac{kg \cdot m}{s}\ \text{down}}$

(5) $p = m \cdot v$

$\frac{14.26}{6.2} = \frac{6.2 \cdot v}{6.2}$

$v = 2.3$ ✓

1b] $14.26 \frac{kg \cdot m}{s}$ down

2a] ① $v = 3.5\ m/s$ $m = 4.2 + 7.6 + 3.2 = 15\ kg$

① p

② $p = m \cdot v$

③ $p = 15\ kg \cdot 3.5 \frac{m}{s}$

④ $p = 15 \cdot 3.5$

$= 52.5 \frac{kg \cdot m}{s}$ down

⑤ $p = m \cdot v$

$\frac{52.5}{3.5} = \frac{m \cdot 3.5}{3.5}$

$m = 15$ ✓

2b] $52.5 \frac{kg \cdot m}{s}$ down

2c] (1a) $m = 5.2 + 2.3 = 7.5\ kg$

$p = 52.5 \frac{kg \cdot m}{s}$ down

(1b) v

(2) $p = m \cdot v$

(3) $52.5 \frac{kg \cdot m}{s} = 7.5\ kg \cdot v$

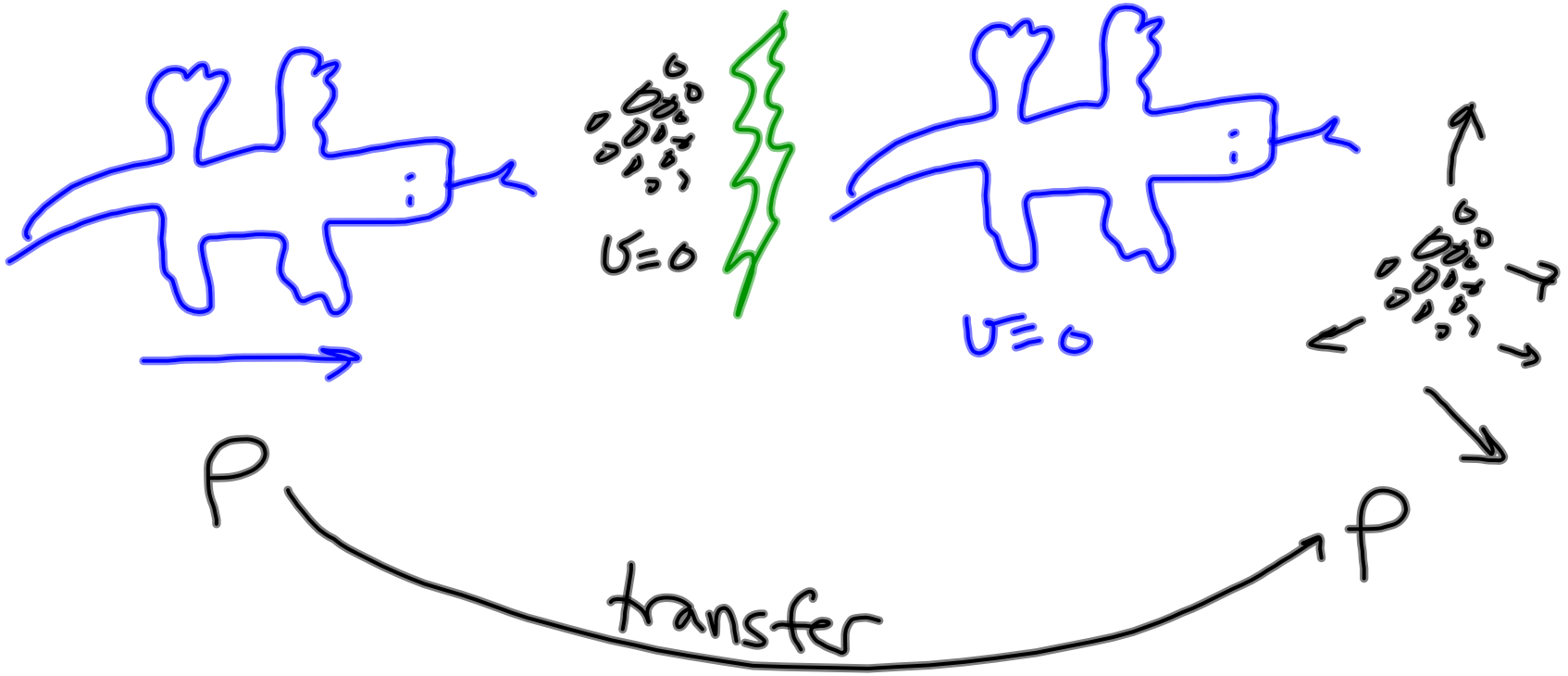
(4) $\frac{52.5}{7.5} = \frac{7.5 \cdot v}{7.5}$

$v = \boxed{7 \frac{m}{s} \text{ down}}$

(5) $p = m \cdot v$

$= 7.5 \cdot 7$

$p = 52.5$


U=0
U=0
p
transfer
p

3] (a) $m = 45.3\,kg$ $v = 4.2\,m/s$

(b) p

(2) $p = m \cdot v$

(3) $p = 45.3\,kg \cdot 4.2\,m/s$

(4) $p = 45.3 \cdot 4.2$

$= \boxed{190.26\ \frac{kg \cdot m}{s}\ up}$

(5) $p = m \cdot v$

$\frac{190.26}{45.3} = \frac{45.3 \cdot v}{45.3}$

✓ $v = 4.2$

$190.26\ \frac{kg \cdot m}{s}$ up is the momentum of 14 BB's combined