AMC WARM-UP PAPER
JUNIOR PAPER 7
SOLUTIONS

1. $\frac{1}{2}$ of $\frac{1}{3} = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$,

hence (D).

2. $x + 45 + 105 + 125 = 360$, so $x = 360 - 275 = 85$,

hence (C).

3. The four payments total $4 \times \$65 = \$260$. Hence the amount saved is $\$260 - \$249 = \$11$,

hence (A).

4. The total area A is given by

$$\begin{aligned} A &= \text{area of all 5 circles} - \text{area of the overlap} \\ &= 5 - \left(4 \times \frac{1}{8}\right) \\ &= 5 - \frac{1}{2} \quad = \quad 4\frac{1}{2}, \end{aligned}$$

hence (B).

5. If one side is twice the other, the perimeter is equivalent to 6 times the shorter side, so the shorter side is $\frac{24}{6} = 4\,\text{cm}$ and the longer side is then $8\,\text{cm}$. Thus the area, in square centimetres, is $8 \times 4 = 32$,

hence (E).

6. Volume of the carton is given by $V = s^2h$, where s is the length of the square base and h is the height. $1\text{L} = 1000\,\text{mL} = 1000\,\text{cubic centimetres}$. Thus

$$\begin{aligned} 7 \times 7 \times h &= 1000 \\ h &= \frac{1000}{49} \\ &\approx \frac{1000}{50} = 20, \end{aligned}$$

hence (B).

7. The minimum score x can be gained by one student when each of the other nine students achieve the maximum score, i.e have a combined score of 900. Then, for this score x,

$$\frac{900 + x}{10} = 92,$$

and $x = 20$,

hence (A).

8. The area of the square is $5 \times 5 = 25$ square units.
Counting the shaded right-angled triangles (each half a square), we get a total of 20, which have an area of 10 square units.
Thus, as a fraction of the square, the portion shaded is $\frac{10}{25} = 0.4$,

hence (B).

9. Let the number of large bags be x. Then the number of small bags is $46 - x$, and

$$\begin{aligned} 20x + 8(46 - x) &= 560 \\ 20x + 368 - 8x &= 560 \\ 12x &= 192 \\ x &= 16, \end{aligned}$$

hence (B).

10. The total number of edges on all the faces is
$(20 \times 3) + (30 \times 4) + (12 \times 5) = 240$,
but this counts each edge twice, as it occurs on exactly two adjacent faces.
Hence the number of edges is 120,

hence (B).