10.2 Answers

GCSE Mathematics
Ratio and Similarity

Answer 1

$54 \times 66 \times 96$

[2 marks]

Answer 2

(i) $\frac{1}{2} \times (7 + 15) \times 25 = \frac{1}{2} \times 22 \times 25$

$= 275\ \text{cm}^2$

[1 mark]

(ii) $\frac{30}{25} = \frac{6}{5}$ **(iii)** $\frac{36}{25}$ **(iv)** $275 \times \frac{36}{25} = 396\ \text{cm}^2$

[1, 1, 1 marks]

Answer 3

(i) F **(ii)** T **(iii)** F

[1, 1, 1 marks]

Answer 4

(i) $\frac{42}{36} = \frac{7}{6}$ **(ii)** $24 \times \frac{7}{6} = 28\ \text{cm}$

(iii) $\frac{6}{7}$ **(iv)** $56 \times \frac{6}{7} = 48\ \text{cm}$

[1, 1, 1, 1 marks]

Answer 5

(a) $\frac{90}{20} = \frac{9}{2}$ **(b)** $\frac{2}{3}$

[2, 2 marks]

Answer 6

Directly Congruent : A - K E - J H - I

Indirectly Congruent : B - L D - F

[6 marks]

Answer 7

(a) 8 cm **(b)** 7.5 cm **(c)** $40\ \text{cm}^2$

[2, 2. 4 marks]

Answer 8

(a) 7.8 cm **(b)** 4.8 cm

[2, 2 marks]

Answer 9

$$lsf = \frac{7.2}{3.2} = \frac{72}{32} = \frac{9}{4} \qquad \therefore vsf = \frac{729}{64}$$

$$Number\ of\ doughnuts = 5 \times \frac{729}{64} = 57$$

[4 marks]

Answer 10

$$lsf = \frac{55}{10} = \frac{11}{2} \qquad \therefore DE = 8 \times \frac{11}{2} = 44\,\text{cm}$$

$$asf = \frac{121}{4} \qquad \therefore Area\ ADE = 24 \times \frac{121}{4} = 726\,\text{cm}^2$$

$$Area\ trapezium\ BCED = 726 - 24$$

$$= 702\,\text{cm}^2$$

[6 marks]

Answer 11

$$lsf = \frac{18}{12} = \frac{3}{2}$$

$$\therefore asf = \frac{9}{4}$$

$$Area\ prism\ Q = 544 \times \frac{9}{4}$$

$$= 1224\,\text{cm}^2$$

[4 marks]

Answer 12

$$Area\ shaded = 75 - \left(\frac{2}{5}\right)^2 \times 75$$

$$= 63\,\text{cm}^2$$

[4 marks]

Answer 13

(i) $lsf = \frac{33}{12} = \frac{11}{4} \qquad \therefore TS = 8 \times \frac{11}{4} = 22\,\text{cm}$

[2 marks]

(ii) Let area $\triangle PQR$ be x in which case,

$$(x + 210) \times \left(\frac{4}{11}\right)^2 = x$$

$$16x + 3360 = 121x$$

$$105x = 3360$$

$$x = 32\,\text{cm}^2$$

[3 marks]

(iii) $242\,\text{cm}^2$

[2 marks]