

Answers

Question 1

A. Write each ratio in its simplest form:

- i) $35:15 = 7:3$
- ii) $(1/3):(3/4) = 4:9$

B. EUR58.50 is divided between Ann and Barry in the ratio 8:5.

Ann = $(8/13) * 58.50 = \text{EUR}36.00$, Barry = $(5/13) * 58.50 = \text{EUR}22.50$.

C. Sam and Tina share sweets in the ratio 2:3. If Sam receives 18 sweets, Tina receives 27 sweets.

Question 2

12 men can paint a school building in 10 days (work = 120 man-days).

a) One man would take 120 days.

b) If the job must be done in 15 days, men = $120/15 = 8$ men.

Question 3

(Question 3 was not visible in the provided PDF/images.)

Question 4

A. In triangle ACB, $55 + 80 + y = 180$, so $y = 45$ deg.

Since BE is parallel to AC, angle x equals angle between AC and AB, so $x = 55$ deg.

B. Triangle: $72 + 2x + 4y = 180 \rightarrow x + 2y = 54$.

Linear pair: $4y + 5x = 180$. Solve $\rightarrow x = 24$, $y = 15$.

Question 5

A. $4(2x+1) + 3(5x-2) = 8x+4+15x-6 = 23x-2$.

B. $-2a(a-3y) - a(a+4y) = -3a^2 + 2ay$.

C. $(x+4)(x-3) = x^2 + x - 12$.

Question 6

If $t=4$ and $p=-3$, then $2t - 3p^2 = 8 - 27 = -19$.

Question 7

A. $2r + 7 = 4r - 5 \rightarrow 12 = 2r \rightarrow r = 6$.

B. $5(y-2) + 12 = 2(y-5) \rightarrow 5y+2 = 2y-10 \rightarrow y = -4$.

Question 8

Let Bart have x euro. Lisa has $x+12$ and Maggie has $4x$.

Equation: $x + (x+12) = 4x \rightarrow x = 6$. Bart has EUR6 (Lisa EUR18, Maggie EUR24).

Question 9

Width = x cm, length = $x+3$ cm.

a) Length = $x+3$ cm.

b) Perimeter = $2(x + x+3) = 4x + 6$ cm.

c) $4x + 6 = 26 \rightarrow x = 5$ cm.

Question 10

A. $5x - 7 > 3 \rightarrow 5x > 10 \rightarrow x > 2$, so $x \geq 3$ for x in N.

B. $7x + 1 \leq 3x - 15 \rightarrow 4x \leq -16 \rightarrow x \leq -4$.

Question 11

A. $x + y = 5$ and $x - y = -7 \rightarrow 2x = -2 \rightarrow x = -1$, $y = 6$.

B. $3x + 4y = 5$ and $5x - 6y = 2 \rightarrow y = 1/2$, $x = 1$.

Question 12

A. $a = \sqrt{10^2 + 12^2} = \sqrt{244} = 2\sqrt{61}$.

B. $f = \sqrt{5^2 - 2^2} = \sqrt{21}$.

Question 13

Area = base * height = 88 cm² with base 11 cm $\rightarrow h = 88/11 = 8$ cm.

Question 14

Circumference = $\pi * d = 18\pi$ cm = 56.5 cm (to 1 dp).

Question 15

a) Front face area = rectangle $8*7 +$ triangle $(1/2)*8*(10-7) = 56 + 12 = 68$ m².

b) Volume = $68 * 20 = 1360$ m³ = 1,360,000 litres.

Question 16

Volume of paint = $\pi * r^2 * h = \pi * 15^2 * 24 = 5400\pi$ cm³.

Question 17

A. Volume of sphere = $(4/3) * \pi * 7^3 = (1372/3)\pi$ cm³.

B. Cube side = 14 cm, so volume = $14^3 = 2744$ cm³.

C. Unoccupied volume = $2744 - (1372/3)\pi$ = about 1307 cm³ (nearest cm³).

D. Percentage unoccupied = $1307/2744 * 100$ = about 47.6%.