WA2 Revision Paper

Fractions, area of triangles and volume

30 marks | Suggested time: 50 minutes | No calculator

Answer all questions. Show working for Sections B and C. Give fractions in their simplest form. Diagrams are not drawn to scale.

Section A | 6 × 1 mark

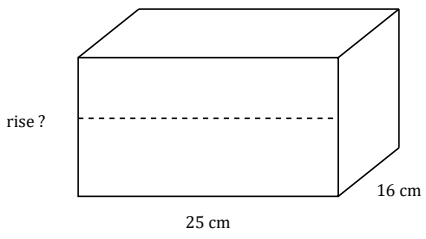
1. A basket has 48 fruits. $\frac{3}{4}$ are apples and $\frac{2}{3}$ of the apples are red. How many red apples are there? [1]

(1) 12 (2) 18

(3) 24 (4) 36

Answer:

2. A rectangular tank has an internal base of 25 cm by 16 cm. Adding 2 litres of water raises the water level by how much? [1]



(1) 2 cm (2) 4 cm

(3) 5 cm (4) 8 cm

Answer:

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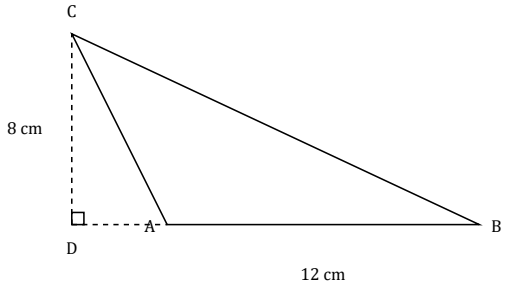
3. In triangle ABC, CD is perpendicular to the extended line AB. Find the area of triangle ABC. [1]



(1) 24 cm^2

(2) 48 cm^2

(3) 96 cm^2

(4) 120 cm^2

Answer:

4. Nora uses $\frac{2}{5}$ of a ribbon, then $\frac{1}{3}$ of the remaining ribbon. What fraction of the original ribbon does she use the second time? [1]

(1) $\frac{1}{15}$

(2) $\frac{1}{5}$

(3) $\frac{2}{5}$

(4) $\frac{8}{15}$

Answer:

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5. A cube of edge 12 cm is cut into cubes of edge 4 cm, with no waste. How many small cubes are obtained? [1]

(1) 3

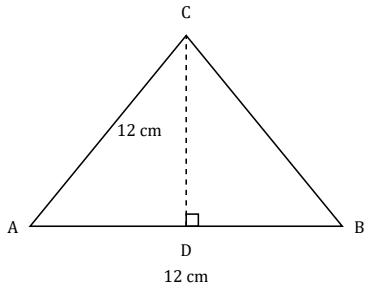
(2) 9

(3) 27

(4) 36

Answer:

6. A triangle has an area of 72 cm^2. If its base stays the same and its perpendicular height is halved, what is its new area? [1]



(1) 18 cm^2

(2) 36 cm^2

(3) 72 cm^2

(4) 144 cm^2

Answer:

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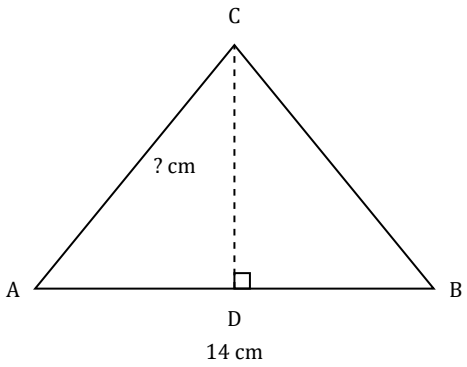
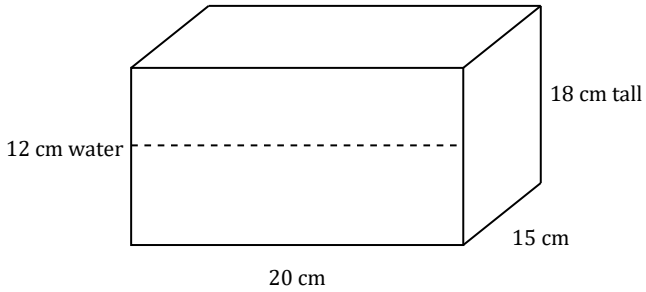
Section B | 6 × 2 marks

7. Triangle ABC has area 84 cm^2 and base AB = 14 cm. Find its perpendicular height CD. [2]



Answer:

8. A tank has internal dimensions 20 cm by 15 cm by 18 cm. The water is 12 cm deep. If 2.7 litres are poured in, how much water overflows? Give your answer in millilitres. [2]



Answer:

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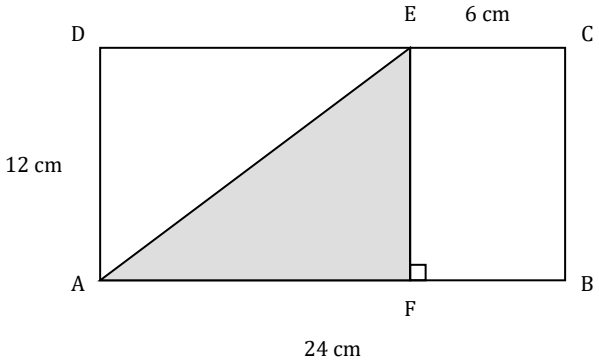
9. ABCD is a rectangle. E lies on DC and F is directly below E on AB. AB = 24 cm, AD = 12 cm and EC = 6 cm. Find the total unshaded area. [2]



Answer:

10. A baker has $4\frac{1}{2}$ kg of flour. She uses $\frac{5}{6}$ of it. How much flour remains? Give your answer as a fraction of a kilogram. [2]

Answer:

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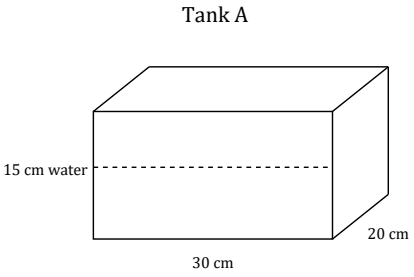
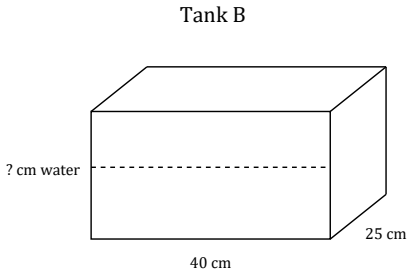
11. Lena spends $\frac{1}{3}$ of her money on a book, then $\frac{3}{8}$ of the remainder on a meal. She has $40 left. How much did she have at first? [2]

Answer:

12. Water in a tank with internal base 30 cm by 20 cm is 15 cm deep. All of it is poured into an empty tank with internal base 40 cm by 25 cm. Find the new water depth. [2]





Answer:

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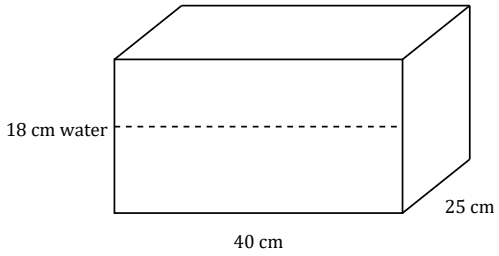
Section C | 3 × 4 marks

13. Tank A has an internal base of 40 cm by 25 cm and water 18 cm deep. Tank B has an internal base of 30 cm by 20 cm and water 10 cm deep. Water is transferred from A to B until both depths are equal. Neither tank overflows. [4]

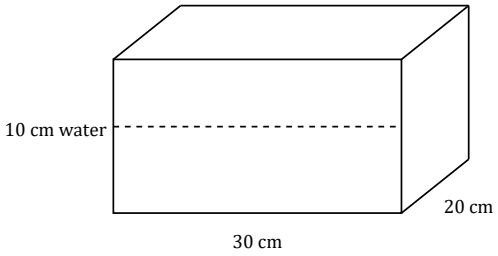
(a) Find the common water depth. [2]

(b) How many litres are transferred? [2]

Tank A



Tank B



Answer:

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14. Mira uses $\frac{2}{5}$ of her ribbon for a large bow. She uses $\frac{1}{3}$ of the remaining ribbon for a small bow. The large bow uses 90 cm more ribbon than the small bow. [4]

(a) Find the original ribbon length. [2]

(b) She cuts all the ribbon left into 6 equal pieces. Find the length of each piece. [2]

Answer:

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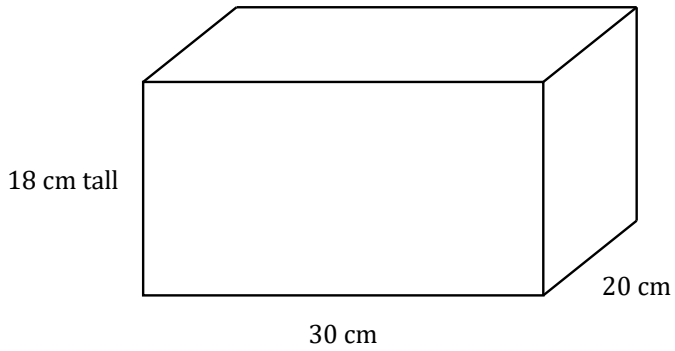
15. A rectangular box has internal dimensions 30 cm by 20 cm by 18 cm. Cubes of edge 5 cm are placed in rows and layers, with their faces parallel to the box faces. [4]

(a) Find the greatest number of cubes that can fit completely inside. [2]

(b) Find the volume of the empty space after that number of cubes is packed. [2]



Answer:

WA2 Worked Solutions

1. 24

Correct option: (3)

Apples = $\frac{3}{4} \times 48 = 36$.

Red apples = $\frac{2}{3} \times 36 = 24$.

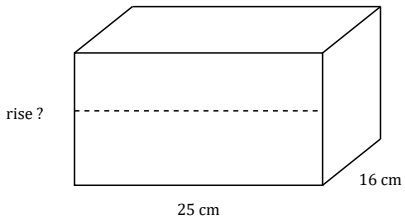
2. 5 cm

Correct option: (3)

2 litres = 2000 cm^3.

Base area = $25 \times 16 = 400$ cm^2.

Rise = $2000 \div 400 = 5$ cm.

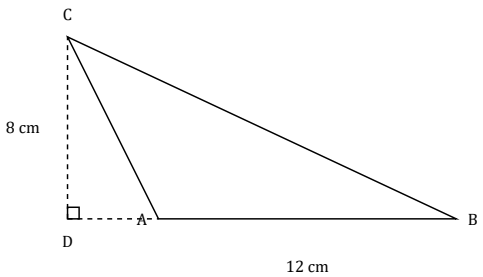


3. 48 cm^2

Correct option: (2)

The perpendicular height is CD = 8 cm, even though D lies outside AB.

Area = $\frac{1}{2} \times 12 \times 8 = 48$ cm^2.



WA2 Worked Solutions

4. $\frac{1}{5}$

Correct option: (2)

Remaining after first use = $\frac{3}{5}$.

Second use = $\frac{1}{3} \times \frac{3}{5} = \frac{1}{5}$.

5. 27

Correct option: (3)

Each edge holds 12 ÷ 4 = 3 small cubes.

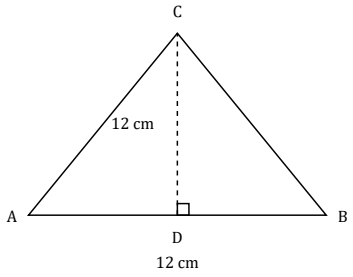
Number = 3 × 3 × 3 = 27.

6. 36 cm^2

Correct option: (2)

The area is halved when the height is halved and the base is unchanged.

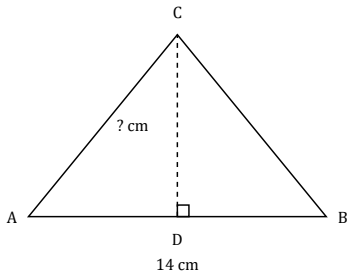
72 ÷ 2 = 36 cm^2.



WA2 Worked Solutions

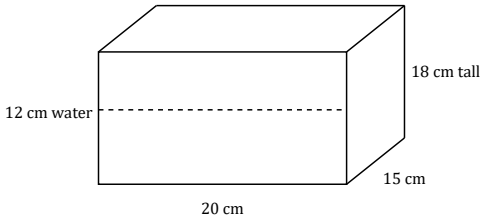
7. 12 cm

Base × height = 84 × 2 = 168.
Height CD = 168 ÷ 14 = 12 cm.



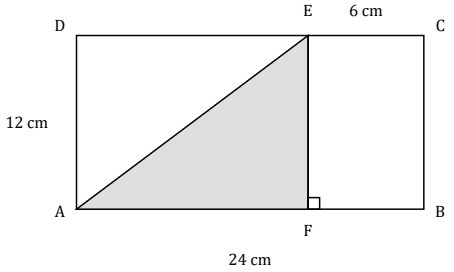
8. 900 ml

Space available = 20 × 15 × (18 - 12) = 1800 cm^3.
2.7 litres = 2700 cm^3.
Overflow = 2700 - 1800 = 900 cm^3 = 900 ml.



9. 180 cm^2

AF = 24 - 6 = 18 cm.
Shaded triangle AEF = $\frac{1}{2}$ × 18 × 12 = 108 cm^2.
Unshaded area = 24 × 12 - 108 = 180 cm^2.



WA2 Worked Solutions

10. $\frac{3}{4}$ kg

Fraction left = $\frac{1}{6}$.

Flour left = $\frac{1}{6} \times \frac{9}{2} = \frac{9}{12} = \frac{3}{4}$ kg.

11. $96

After the book, $\frac{2}{3}$ remains.

After the meal, $\frac{5}{8} \times \frac{2}{3} = \frac{5}{12}$ of the original remains.

5 units = $40, so 1 unit = $8.

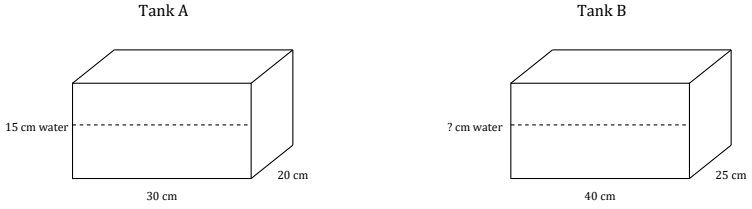
Original = 12 × $8 = $96.

12. 9 cm

Water volume = 30 × 20 × 15 = 9000 cm^3.

New base area = 40 × 25 = 1000 cm^2.

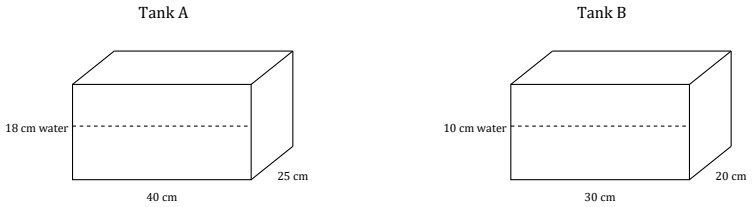
Depth = 9000 ÷ 1000 = 9 cm.



WA2 Worked Solutions

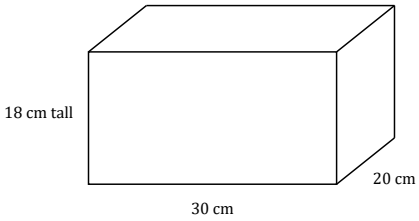
13. (a) 15 cm; (b) 3 litres

Total water = 40 × 25 × 18 + 30 × 20 × 10 = 24 000 cm^3.
Combined base area = 1000 + 600 = 1600 cm^2.
Common depth = 24 000 ÷ 1600 = 15 cm. [2]
A loses 18 - 15 = 3 cm of depth.
Transferred volume = 40 × 25 × 3 = 3000 cm^3 = 3 litres. [2]



14. (a) 450 cm; (b) 30 cm

Small bow uses $\frac{1}{3} \times \frac{3}{5} = \frac{1}{5}$ of the original.
Difference = $\frac{2}{5} - \frac{1}{5} = \frac{1}{5}$, worth 90 cm.
Original = 90 × 5 = 450 cm. [2]
Fraction left = $1 - \frac{2}{5} - \frac{1}{5} = \frac{2}{5}$.
Length left = $\frac{2}{5} \times 450$ = 180 cm.
Each piece = 180 ÷ 6 = 30 cm. [2]

15. (a) 72 cubes; (b) 1800 cm^3

Along the dimensions, 6, 4 and 3 cubes fit respectively.
Number of cubes = 6 × 4 × 3 = 72. [2]
Box volume = 30 × 20 × 18 = 10 800 cm^3.
Cube volume = 5 × 5 × 5 = 125 cm^3.
Empty space = 10 800 - 72 × 125 = 1800 cm^3. [2]