

1. Paint Mixing (6 marks)

A decorator needs to mix blue and white paint in the ratio 2:5 to make 8.75 litres of light blue paint.

Paint is sold in 2.5-litre tins and costs £12.50 for blue and £9.50 for white.

How much will the decorator need to spend on paint?

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2. Paint Mixing (6 marks)

A decorator needs to mix yellow and blue paint in the ratio 1:8 to make 22.5 litres of light green paint.

Paint is sold in 5-litre tins and costs £21.50 for yellow and £18.50 for blue.

How much will the decorator need to spend on paint?

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3. Mixing Cement (6 marks)

A builder is mixing cement using a ratio of 3:2:1 for sand, gravel, and cement powder, respectively.

She will pour the cement mixture into foundations dug in the shape of a cuboid measuring 4m by 1.5m by 0.2m.

The builder has 0.9 m³ of sand, 0.7 m³ of gravel, and 0.4 m³ of cement powder. Do they have enough to make the required mixture?

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4. Mixing Cement (6 marks)

A builder is mixing cement using a ratio of 5:3:2 for sand, gravel, and cement powder, respectively.

She will pour the cement mixture into foundations dug in the shape of a cuboid measuring 5m by 3.5m by 0.2m.

The builder has 1.8 m³ of sand, 1.2 m³ of gravel, and 1.1 m³ of cement powder. Do they have enough to make the required mixture?

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5. Aquarium Tank (6 marks)

A pet store has a fish tank in the shape of a triangular prism. The triangular cross-section has a base of 60 cm and a height of 1 m.

The length of the tank is 1.5 m.

The fish tank will be partially filled with water such that the ratio of the filled to unfilled volume is 4:1.

Water is added to the tank at a rate of 8 litres per minute. How long will it take to fill the tank? $(1 \text{ cm}^3 = 1 \text{ ml})$



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6. Aquarium Tank (6 marks)

A pet store has a fish tank in the shape of a triangular prism. The triangular cross-section has a base of 80 cm and a height of 1.2 m.

The length of the tank is 90 cm.

The fish tank will be partially filled with water such that the ratio of the filled to unfilled volume is 8:1.

Water is added to the tank at a rate of 10 litres per minute. How long will it take to fill the tank? $(1 \text{ cm}^3 = 1 \text{ ml})$



7. Water Storage (6 marks)

A cylindrical water tank has a diameter of 1.2 m and a height of 2.5 m. (Use $\pi = 3.14$)

Sterilizing fluid needs to be added to the tank such that the ratio of sterilizer to water is 1:99.

Water is removed from the full tank at a rate of 0.4 litres per second.

How long will it take to make enough space for the sterilizer? (1 $m^3 = 1000$ litres)

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8. Water Storage (6 marks)

A cylindrical water tank has a diameter of 2.4 m and a height of 3.2 m. (Use $\pi = 3.14$)

Sterilizing fluid needs to be added to the tank such that the ratio of sterilizer to water is 1:999.

Water is removed from the full tank at a rate of 0.3 litres per second.

How long will it take to make enough space for the sterilizer? (1 $m^3 = 1000$ litres)

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9. Storage Boxes (6 marks)

A warehouse stores small and large boxes in the ratio 3:5.

The warehouse has 240 more large boxes than small boxes.

Each small box has a volume of 0.6 m³, and each large box

has a volume of 1.2 m³.

Find the total volume occupied by all the boxes.

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10. Storage Boxes (6 marks)

A warehouse stores small and large boxes in the ratio 5:7.

The warehouse has 300 more large boxes than small boxes.

Each small box has a volume of 0.5 m³, and each large box

has a volume of 1.5 m³.

Find the total volume occupied by all the boxes.

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11. Cooking for a Party (6 marks)

A chef is preparing food for 120 people using a recipe that serves 8 people. The ingredients per recipe batch are: •600 g of pasta •450 g of cheese •200 g of butter

•150 g of ham (optional)

The chef knows that, out of the 120 people, the ratio of those who don't eat ham to those who do is 2:3.

If the chef assumes that everyone who eats ham will want it, and ham is sold in 200 g packs, how many packs of ham should they buy?

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12. Cooking for a Party (6 marks)

A chef is preparing food for 180 people using a recipe that serves 10 people. The ingredients per recipe batch are: •900 g of pasta

- 1.2 kg of cheese
- 600 g of butter

•225 g of ham (optional)

The chef knows that, out of the 180 people, the ratio of those who don't eat ham to those who do is 2:7.

If the chef assumes that everyone who eats ham will want it, and ham is sold in 500 g packs, how many packs of ham should they buy?

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