Easter practice questions

You need to know about.....

- Circumference and area of circles
- Perimeters of composite shapes
- Areas of parallelograms, triangles, rectangles and composite shapes made from these
- Volumes of cuboids and prisms of various cross sections including cylinders!

My answers use $\pi = 3.142$, you might have small differences if you use the calculator value.

Questions

1) Fred has a cylindrical coffee mug that is 8cm across and 10cm high. Calculate the volume of the coffee cup.

2) Algernon has a rectangular table that is 70cm wide and 120cm long. He wants to add macramé piping around the perimeter of the table. What length of piping will he need? Give your answer in metres.

3) Your bicycle has wheels 70 cm in diameter. You ride for 1.5 km. How many turns of the front wheel is this to the nearest turn?

4) Evadne has a cylindrical cake tin that is 20cm across and 10 cm deep. Calculate the volume of the cake tin.

5) Aaron's pram has wheels that are 30cm in diameter. Alas, the pram starts to roll down the hill. How far will the pram travel in 1 500 turns of the wheels?

6) A flower bed is triangular in shape and has a base of 30 metres and a 'height' of 25 metres. Calculate the area of the flower bed.

7) Horse manure is spread on the flower bed in question 6 so that each square metre has 3 Kg of manure. Horse manure is delivered in sacks that weigh 60Kg. How many sacks will you need?

8) Find the volume of a cuboid classroom that is 4m by 5m by 2.4 m high.

9) Find the area of a circular ice rink that has a diameter of 25m. Quote your answer to the nearest 100 m^2

10) Buffy has a cylindrical saucepan that is 25cm in diameter. The saucepan is 20cm deep. Calculate the volume of the cookware in *litres*.

11) The back wall of a wooden garden shed has the shape of a rectangle with an isosceles triangle on top. The shed is 3m wide, the rectangular section is 2.4m tall, and the triangular section has an additional height of 2m. Calculate the area of the back wall.

12) Sodium Hydroxide drain cleaner is supplied in 500g packs. The instructions state that you should add 100g of the powder to one litre of water to clear the U-bend. How many litres can you make from a pack?

13) A cylindrical bucket has a diameter of 20cm. Suppose you poured the solution in question 12 into the bucket. How high would the surface of the solution be?

14) Sîan decides to paint the box room. The room is a cuboid, and measures 2.4m wide, 3.6m long and 2.4m high. She decides to paint the walls and ceiling the same colour with two coats. Suppose that each litre of paint covers 12 m^2. How many litres of paint must Sîan buy?

15) A tent has a triangular cross section and is 3m wide and 2m tall. If the tent is 4m long, calculate the volume of the tent in m^2.

16) Clarissa Dixon-Wright decides to cook a chicken casserole. She has a cylindrical casserole dish that is 30cm in diameter, and there is 5 litres of stock available. Calculate the depth of the stock when poured into the casserole dish.

17) A tin of chick peas has a cylindrical shape and is 7.5cm in diameter, and is 10.3cm high. Calculate the volume of the can.

18) A chick pea is roughly spherical in shape, with a diameter of 0.7cm. The volume of a sphere is given by $\frac{4}{3}\pi r^3$. How many chick peas could fit in the can?

19) A lamp stand is made from a cube base with a cylinder on top. The cube has side 15cm, and the cylinder has the same diameter but is 20cm high. Calculate the volume in litres of the lamp stand.

20) A cricket pitch is rolled flat using a large roller pulled by volunteers. The roller has a diameter of 2ft. The pitch is 22 yards long. Calculate the number of revolutions that the roller makes in one length of the pitch.

21) The Earth's orbit around the Sun has a radius of 93 million miles, and the Earth completes an orbit in 365.25 days. How fast is the Earth moving through its orbit in miles per hour? (work in units of millions or use Standard Form)

22) The Earth has a radius of roughly 3960 miles, and the Earth completes one revolution in 24 hours. If you sat still for a day, how fast would you be moving around the Earth's axis?

23) The surface area of a sphere is $4\pi r^2$ where r is the radius of the sphere. The dome of the mosque of the Dome of the Rock in Jerusalem is 10m in diameter and is a perfect hemisphere. Calculate the surface area of the Dome.

24) Norbert has a large packet of Toblerone™. The packet is a prism with a triangular cross section. The end of the packet is 5cm wide and 4.3 cm high. The packet is 20cm long. What volume does the packet hold?

25) A fridge drip tray has a cuboid shape and is 45cm wide, 60cm long and 2cm deep. If it is full of water when you defrost the fridge, how many *litres* of water are in the tray to the nearest litre?

26) A flower bed is made from a rectangular patch with a circular duck pond in the centre. The rectangular patch of soil is 15m wide and 20m long. The duck pond has a radius of 5m. Calculate the area of the soil.

27) The gardeners decide to edge the flower bed in question 26 with railings. They want to add railings around the pond as well to prevent accidents. What length of railing will they need?

28) A square has an area of 25cm². Calculate the perimeter of the square.

29) A picture frame is rectangular in shape and is made of brass. The outer dimensions of the frame are 30cm by 20cm, and the inner dimensions are 25cm by 15cm. Calculate the area of the brass in the frame.

30) A can of tomatoes is cylindrical in shape and has diameter 7.5cm and height 11cm. Sketch the net of the can. Calculate the surface area of the metal needed to make the can including the lids. Neglect any seams and overlaps.

31) A carboard box is 30cm long, 20cm wide and 25cm high but has no lid, just a bottom and four sides. Sketch the net of the box and calculate the surface area of the card needed to make the box.

32) A food can machine makes cans that are 10cm in diameter. The cans can be any length you want. How long would a can have to be to hold a litre of liquid?

Answers

1) 503 cm² 2) 3.8m 3) 682 turns 4) 3140 cm³ 5) 1.41 km 6) 375m² 7) 19 bags 8) 48m³ 9) 500 m² 10) 9.8 li 11) 10.2m² 12) 5 li 13) 15.9cm 14) 6.24 li 15) 12m³ 16) 7cm 17) 455 cm³ 18) 317 peas 19) 6910 cm³ 20) 11 turns 21) 67 000 mph 22) 1 036 mph 23) 314m² 24) 215cm³ 25) 5 li 26) 221m² 27) 101m 28) 20cm 29) 225m² 30) 348 cm² 31) 3100 cm² 32) 12.7cm