FM Blackpool Tower

Blackpool Tower is a tourist attraction in Blackpool, Lancashire, England. It opened to the public on 14 May 1894. Inspired by the Eiffel Tower in Paris, it rises to 518 ft 9 inches.

The foundation stone was laid on 29 September 1891. The total cost for the design and construction of the Tower and buildings was about £290 000. Five million bricks, 2500 tonnes of steel and 93 tonnes of cast steel were used to construct the Tower. The Tower buildings occupy a total of 6040 sq yards.
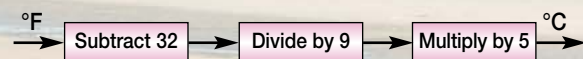
When the Tower opened, 3000 customers took the first rides to the top. Tourists paid 6 old pence for admission, a further 6 old pence for a ride in the lifts to the top, and a further 6 old pence for the circus.

Inside the Tower there is a circus, an aquarium, a ballroom, restaurants, a children's play area and amusements.

In 1998 a 'Walk of Faith' glass floor panel was opened at the top of the Tower. Made up of two sheets of laminated glass, it weighs half a tonne and is two inches thick. Visitors can stand on the glass panel and look straight down 380 ft to the promenade.

Use the information to help you answer these questions.

1 In what year did the Tower celebrate its centenary (100th birthday)?

2 How many years and months did it take to build the Tower?

3 The Tower is painted continuously. It takes seven years to paint the Tower completely. How many times has it been painted since it opened?

4 The aquarium in the Tower opened 20 years earlier than the Tower. What year did the aquarium celebrate its 100th birthday?

5 The largest tank in the aquarium holds 32 000 litres of water. There are approximately 4.5 litres to a gallon. How many gallons of water does the tank hold?

6 The water in the tropical fish tanks is kept at 75 °F. This rule is used to convert from degrees Fahrenheit to degrees Centigrade.

°F → Subtract 32 → Divide by 9 → Multiply by 5 → °C

Use this rule to convert 75°F to °C.

7 The circus in the base of the Tower first opened to the public on 14 May 1894. Admission fee was 6 old pence. Before Britain introduced decimal currency in 1971 there were 240 old pence in a pound.

  a What fraction, in its simplest form, is 6 old pence out of 240 old pence?

  b What is the equivalent value of 6 old pence in new pence?

8 Over 650 000 people visit the Tower every year. The Tower is open every day except Christmas day. Approximately how many people visit the Tower each day on average?

9 **a** In January 2008, it cost €12 to visit the Eiffel Tower and £9.50 to visit Blackpool Tower. The exchange rate in January 2008 was £1 = €1.35. Which Tower was cheapest to visit and by how much (answer in pounds and pence)?

  b The Eiffel Tower is 325 m high. Blackpool Tower is 519 ft high. 1 m ≈ 3.3 ft. How many times taller is the Eiffel Tower than the Blackpool Tower?

  c The Eiffel Tower gets 6.7 million visitors a year. How many times more popular is it with tourists than the Blackpool Tower?

  d The Eiffel Tower celebrated its centenary in 1989. How many years before the Blackpool Tower did it open?

10 Animals have not appeared in the Tower Circus performances since 1990.

For how many years did animals appear in the circus?

11 The top of the Tower is 518 ft and 9 inches above the base. There are 12 inches in a foot and 2.54 cm in an inch. Calculate the height of the Tower in metres.

12 The 'Walk of Faith' can withstand the weight of five baby elephants. One baby elephant weighs on average 240 kg. One adult human weighs on average 86 kg. How many adults should be allowed on the 'Walk of Faith' at any one time (if they could fit)?

13 The Tower and buildings cost approximately £290 000 to construct. Today it is estimated that the cost would be £230 million. By how many times has the cost of building gone up since the Tower was built?

14 The Tower lift makes about 75 trips up and down each day. Each ascent and descent is approximately 350 ft. There are 5280 ft in a mile. In a year (assume 360 days) approximately how many miles does the lift travel?

15 The Ballroom floor measures 36.58 m by 36.58 m. It comprises 30 602 separate blocks of mahogany, oak and walnut.

Assuming that every block is equal in area, what is the area, in square centimetres, of each block?

Give your answer to the nearest square centimetre.

16 When it is lit up, the tower has 10 000 light bulbs using an average of 15 watts per hour each. The cost of electricity is 12p per kilowatt hour (1000 watts per hour). Calculate the approximate yearly electricity bill for the lights assuming they are lit for 12 hours per day.

17 The circus ring when flooded can hold up to 190 000 litres of water to a depth of 140 cm. (1 litre = 1000 cm³)

  a How many cubic centimetres is 190 000 litres?

  b Assuming that the circus ring is circular the formula for working out the radius if you know the volume, V, and the depth, d, is

$$r = \sqrt{\frac{V}{\pi \times d}}$$

Work out the radius of the circus ring. Give your answer in metres.

18 An approximate formula for how far you can see, D kilometres, when you are m metres above the ground is

$$D = \sqrt{13m}$$

The coast of the Isle of Man is 42 km from Blackpool. Can you see it from the observation deck of the tower which is 120 m above the ground?

Show your working clearly.

Answers