**Day 293** **A Tier 10-a-day**

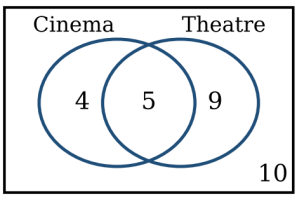
**1** Simplify fully

(a) $\frac{6x^6y^4}{3x^4y^2}$

(b) $(4x^2y)^4$

**2** A closed box is a cuboid measuring 4 cm by 4 cm by 4 cm.
Work out the total surface area.

**3** The Venn diagram shows information about 28 people.
One person is chosen at random.
(a) Find the probability that the person is in both Cinema and Theatre.
(b) Find the probability that the person is in Cinema or Theatre or both.




**4** Work out $5\frac{1}{2} \div 1\frac{2}{3}$

Give your answer as a mixed number in its simplest form.

**5** The mean of the five numbers x, 18, 10, 7, 3 is 9.
Work out the value of x.

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**6** A cylinder has radius 4 cm. It contains water to a depth of 20 cm. (Calculator)
All the water is poured into an empty tank with a rectangular base 15 cm by 16 cm.
Work out the depth of the water in the tank.
Give your answer to 3 significant figures.

**7** A rectangle has width x cm and length (x + 8) cm.
The area of the rectangle is 20 $cm^2$.
(a) Show that $x^2 + 8x - 20 = 0$
(b) Work out the value of x.

**8** The length and width of a rectangular garden are 9.4 m and 5.9 m.
Each measurement is correct to 1 decimal place.
Work out the upper bound for the area.

**9** A rectangle has length 14.4 m and width 4.8 m. (Calculator)
Each measurement is correct to the nearest 0.1 m.
Work out the upper bound for the area of the rectangle.

**10** The histogram shows information about the length of some items.
(a) Work out the number of items with a length in the class 0 to 30 mm.
(b) Work out an estimate for the number with a length greater than 35 mm.

