

F Summer Trials Practice 2

1. Write down the value of the following:

(a) 7^{-2} .

$\frac{1}{49}$

(b) 9^0 .

1

(c) $\left(\frac{3}{2}\right)^{-1}$.

$\frac{2}{3}$

(d) $\left(\frac{1}{4}\right)^{-3}$.

64

2. Solve the simultaneous equations
$$\begin{aligned} 3x + 5y &= 1 \\ 4x - 2y &= 3 \end{aligned}$$

$(x, y) = \left(\frac{17}{26}, -\frac{5}{26}\right)$

3. Expand and simplify $(2x - y)(x - 3y) - (4x - y)^2$.

$2y^2 + xy - 14x^2$

4. Solve $\frac{5}{7 - 2x} = 3$.

$x = \frac{8}{3}$

5. Simplify $\frac{3x^2y(3x^2y)^4}{27x^2y^{10}}$.

$\frac{9x^8}{y^5}$

6. A triangle ABC is such that $AB = 7$, $AC = 10$ and $BAC = 40^\circ$. Find the area of the triangle to three significant figures.

22.5

7. Factorise fully $16x^4 - 100x^2$.

$4x^2(2x + 5)(2x - 5)$

8. Make x the subject of $y = \frac{2x}{x - 7}$.

$x = \frac{7y}{y-2}$

9. The price of a t-shirt is reduced in a sale by 19%. Its sale price is £11.34. Find the original price of the t-shirt.

£14.00

10. Sasha travels at a constant speed of 20 m/s for 1 minute. She then travels at a speed of 40 m/s for 2 minutes. Calculate her overall average speed.

$33\frac{1}{3}$ m/s

11. Find the distance between the points $(-1, 3)$ and $(4, -3)$.

$\sqrt{61}$

12. A map has scale 1 : 50000. Two points are 4.2 cm apart on the map. How far apart are they in real life? Give your answer in km.

2.1 km

13. £30000 is invested in a bank account that pays 5.2% compound interest. How much is in the account after 7 years?

£42779.08

14. A regular hexagon has perimeter 120 cm. Find its area to 1 decimal place.

1039.2 cm²

15. A coin is bias such that the probability of getting one head and one tail (in any order) from two flicks is $\frac{8}{25}$. Find the probability of flicking two heads.

$\frac{1}{25}$ or $\frac{16}{25}$

16. The price of an antique goes up by 20% in one year. It then falls by 20% the next year. What is the overall percentage change over the two years?

4% reduction

17. Solve the simultaneous equations
$$\begin{aligned} ax + y + 1 &= 0 \\ x - y &= 2 \end{aligned}$$

$(x, y) = \left(\frac{1}{a+1}, -\frac{2a+1}{a+1}\right)$