IGCSE Revision 5

Unless otherwise stated you *may* use a calculator. *Everything* on this worksheet is GCSE material.

1. In triangle ABC, $AB = 7$, $BC = 6$ and $AC = 11$. Find angle $A\widehat{B}C$. $\boxed{115.4^\circ}$
2. A few years ago I bought an antique. It has since risen in value by 12%. It is now worth £3640. What did I pay for the antique? $\boxed{£3250}$
3. Use the quadratic formula to solve $2x^2 = 3x + 4$. Give your answers in the form $\frac{a}{4} \pm \frac{\sqrt{b}}{4}$ where a and b are integers to be determined. $\boxed{a = 3, b = 41}$
4. Express $\frac{2}{3x} - \frac{7}{x-1}$ as a (fully simplified) single fraction. $\boxed{\frac{-2-19x}{3x(x-1)}}$
5. Make a the subject of $v = \sqrt{2-a}$. $\boxed{a = 2 - v^2}$
6. In triangle PQR, $Q\widehat{P}R = 61^\circ$, $Q\widehat{R}P = 71^\circ$, $QR = 8$. Find the length PQ. $\boxed{8.65 \text{ to 3sf}}$
7. Factorise fully $12a^2x^2 - 26a^2x - 16a^2$. $\boxed{2a^2(2x+1)(3x-8)}$
8. Find the area of the isosceles triangle with lengths 13cm, 13cm, 6cm. $\boxed{37.9\text{cm}^2 \text{ (to 3sf)}}$
9. Solve the equation $\frac{2}{3-2x} = 7$. $\boxed{x = \frac{19}{14}}$
10. Find the equation of the line through $(2, -3)$ and $(4, 2)$ in the form $ax + by + c = 0$. $\boxed{5x - 2y - 16 = 0}$
11. Expand $(2-\sqrt{3})^3$, giving your final answer in the form $a+b\sqrt{3}$ where a and b are integers. $\boxed{26 - 15\sqrt{3}}$
12. Simplify fully $\frac{3(2xy)^2x^5}{6x^3y^8}$. $\boxed{\frac{2x^4}{y^6}}$
13. Make x the subject of $\frac{x-1}{x-a} = y + 2$. $\boxed{x = \frac{2a+ay-1}{1+y}}$
14. Find the equation of the tangent to $y = x^2 - 3x + 4 - \frac{1}{x}$ when $x = -2$. Give your answer in the form $ax + by = c$ where a, b and c are integers. $\boxed{27x + 4y = 4}$
15. Solve $\left(\frac{3}{4}\right)^n = \frac{64}{27}$. $\boxed{n = -3}$
16. The gradient between the points $(p, 2)$ and $(4, p+2)$ is $\frac{1}{3}$. Find p. $\boxed{p = 1}$
17. Triangle ABC has a right angle at B. If $AB = 12$ and $BC = 17$, find the angle $B\widehat{A}C$. $\boxed{54.8^\circ \text{ (to 3sf)}}$
18. Without a calculator express $\sqrt{18} + \sqrt{98} + \sqrt{2}$ in the form $k\sqrt{2}$ where k is a constant to be determined. $\boxed{k = 11}$
19. In morning break I go to the tuck shop to get food with probability 0.9. If I go to the tuck shop I have a good lesson period 3 with "6 Set 6" withy probability 0.7. However, if I miss going to the tuck shop I have a good lesson with "6 Set 6" with probability 0.2.

(a) Draw a tree diagram to model the situation.

(b) On any given day what is the probability I have a good lesson with "6 Set 6"? $\boxed{0.65}$

20. Solve the equation
$$\frac{x}{2} + \frac{x-3}{3} - \frac{2x-7}{4} = 2.$$
$\boxed{x = \frac{15}{4}}$

21. Solve the equation $4\sin x + 1 = 0$ in the range $-360 < x < 360$. $\boxed{x = -165.5°, -14.5°, 194.5°, 345.5° \text{ (to 1dp)}}$

22. (a) Draw an xy grid so that $-8 < x, y < 8$.

(b) Draw a triangle with vertices at $(-1, 1)$, $(-3, 1)$ and $(-3, 4)$.

(c) Reflect this triangle in the line $x = 2$.

(d) Enlarge the original triangle with a scale factor -2 with centre of enlargement $(0, 1)$.

23. Simplify fully
$$\frac{4x^2 - 10x - 6}{16x^2 - 4}.$$
$\boxed{\frac{x-3}{2(2x-1)}}$

24. If I invested £4500 in a bank account for 10 years with a (compound) interest rate of 4.2%, how much money would I now have in the account? $\boxed{£6790.31}$