

Fifth Holiday Work

To be done on A4 paper, not in your books.

1. Solve $(x - 3)^2 - 64 = 0$. $x = 11$ or $x = -5$
2. A bag has 5 blue and 7 red balls. I select two from the bag without replacement.
 - (a) Draw this situation in a tree diagram.
 - (b) Find the probability of at least one blue.
3. Solve $(x + 1)(x + 2) = 20$.
4. Solve $(x - 7)(x + 8) > 0$.
5. Express $0.\dot{3}4\dot{5}$ as a fraction in its lowest form.
6. Solve $\cos x = 0.4$ in the range $0 < x < 720$.
7. Solve $9^{x+1} = 27^x$.
8. Find the equation of the line through $(2, \frac{1}{2})$ perpendicular to the line $x - 7y = 9$. Give your answer in the form $ax + by + c = 0$ where a , b and c are integers.
9. Express $\frac{1}{x+1} + \frac{3}{x}$ as a single fraction.
10. Express $0.7\dot{8}$ as a fraction in its lowest form.
11. Factorise $4x^2 - 9x$.
12. Solve $(2x - 1)(x - 3) \leq 0$.
13. A bag has 8 blue, 3 red balls and 5 yellow balls. I select two from the bag without replacement.
 - (a) Draw this situation in a tree diagram.
 - (b) Find the probability of at least one blue.
14. Find the equation of the line through $(4, 3)$ parallel to the line $2x + 3y = 9$. Give your answer in the form $ax + by + c = 0$ where a , b and c are integers.
15. A ship sails 10 km on a bearing of 100° . It then sails 5 km on a bearing of 030° . How far is it from its starting point? [Draw a sketch. Draw north lines.]
16. In triangle ABC, $AB = 8$, $BC = 10$ and $\widehat{ACB} = 50$. Find \widehat{BAC} .
17. Solve $\sin x = -0.8$ in the range $-360 < x < 360$.
18. Express $\frac{2}{(x+1)^2} - \frac{4}{x+1}$ as a single fraction.
19. Solve $(2x + 1)^2 - 100 = 0$.
20. Factorise $4x^2 - 9$.
21. Express 0.78 as a fraction in its lowest form.
22. Solve $x(x + 4) = 21$.
23. Solve $2x^2 \geq 3 - x$.

24. A ship sails 2 km on a bearing of 200. It then sails 3km on a bearing of 080. How far is it from its starting point? [Draw a sketch. Draw north lines.]
25. Solve $8^{2x-1} = 4^{x-1}$.
26. Solve $9 \sin^2 x = 4$ in the range $-360 < x < 360$.
27. A bag has 3 blue and 4 red balls. I select three from the bag without replacement.
- (a) Draw this situation in a tree diagram.
 - (b) Find the probability of at least two blues.
28. In triangle ABC , $AB = 8$, $BC = 7$ and $AC = 6$. Find \widehat{BAC} .
29. Solve $4(x + 1)(x + 2) = 3$.
30. Solve $(7x - 2)^2 - 1 = 0$.
31. Express $0.\dot{1}\ddot{3}\ddot{5}$ as a fraction in its lowest form.