Name: _____ Date: _____

SOLVING LINEAR INEQUALITIES WITH UNKNOWNS ON BOTH SIDES

Instructions: Complete all questions in the Spiral, Develop, and Apply sections. Show all your working out.

SPIRAL

1. Write $x^2 + 8x - 5$ in the form $(x + a)^2 + b$.

2. Calculate the total amount after £5000 is invested at 3% compound interest for 4 years.

3. In a class of 30 students, 18 study French, 15 study German, and 6 study both. What is the probability a student studies German given they study French?

4. A laptop is sold for £476 after a 15% discount. Find the original price.

DEVELOP

VIDEO: https://corbettmaths.com/2019/09/09/solving-inequalities/

1. Solve $3x + 2 > x - 4$.

2. Solve $5 - 2x \leq 3x + 10$.

3. Solve $4(2y - 1) \geq 3y + 5$.

4. Solve $2x + 7 < 5x - 8$.

5. Solve $\frac{1}{3}(6 - x) \geq 4$.

6. Solve $3 - 4x > 7x + 25$.

7. Solve $5p - 2(p + 3) \leq 8$.

8. Solve $2(3 - x) + 4x > 12$.

9. Solve $\frac{2x - 1}{3} < x + 2$.

10. Solve $0.5(4 - 3y) \geq y - 1$.

11. Solve $7x - 4 \geq 2x + 11$.

12. Solve $6 - 3x < 4x - 15$.

21. Solve $4x - 3 \geq 7x + 9$.

22. Solve $10 - 5y < 2y - 4$.

23. Solve $3(x - 2) + 2x > 21$.

24. Solve $\frac{5 - x}{2} \geq 3x - 1$.

25. Solve $2(3y + 4) \leq 5y - 6$.

26. Solve $6 - 4x > 3x + 27$.

27. Solve $\frac{2x + 1}{5} < x - 2$.

28. Solve $0.75(8 - 4x) \geq x + 3$.

29. Solve $3(2 - x) + 4x \geq 15$.

30. Solve $5 - 2(3x + 1) < 7$.

31. Solve $7x + 3 \geq 2(4x - 5)$.

32. Solve $\frac{3y - 4}{2} > y + 1$.

13. Solve $2(5 - x) + 3x \geq 18$.

14. Solve $\frac{x}{4} + 2 \leq 3x - 5$.

15. Solve $3(2y + 1) < 5y - 7$.

16. Solve $4 - 2x > 6x + 20$.

17. Solve $5(3 - 2p) \geq 2p - 7$.

18. Solve $\frac{3x + 2}{2} > 2x - 1$.

19. Solve $0.25(8x - 12) < x + 3$.

20. Solve $2(1 - x) + 5x \leq 9$.

33. Solve $4 - 3x \leq 5x - 28$.

34. Solve $2(5x + 1) - 3x > 19$.

35. Solve $\frac{4 - x}{3} \geq 2x - 5$.

36. Solve $0.6(5x - 10) < 2x + 3$.

37. Solve $3(2x - 5) \leq 4x + 7$.

38. Solve $5 - 2(x - 4) > 3x + 1$.

39. Solve $\frac{3 - 2x}{4} \leq x - 5$.

40. Solve $2.5(2x + 6) \geq 4x - 3$.

APPLY

1. Emma wants to buy pens. Shop A sells packs of 5 pens for £4. Shop B sells packs of 8 pens for £6. Emma needs at least 40 pens. Which shop is cheaper? Justify your answer with an inequality.

2. A rectangle's length is 3 cm more than its width. The perimeter is at most 50 cm. Find the possible values for the width.