Numeracy Skills

LET Mathematics & Statistics

1 General Arithmetic

1. Calculate: $4 - 9$

Solution

Start at 4 and move 9 steps down. Answer: -5.

2. Calculate: $-6 + (-5)$

Solution

Adding a negative is the same as subtracting. $-6 - 5 = -11$.

3. Calculate: $-3 - (-7)$

Solution

Two negatives make a positive. This becomes $-3 + 7 = 4$.

4. Calculate: -8×-4

Solution

Negative times Negative equals Positive. $8 \times 4 = 32$.

5. Calculate: $45 \div -9$

Solution

Positive divided by Negative equals Negative. $45 \div 9 = 5$. Answer: -5.

6. Calculate: $-5 + 8 - 12$

Solution

Work left to right: $-5 + 8 = 3$. Then $3 - 12 = -9$.

7. Calculate: $10 - (-5) + (-20)$

Solution

Simplify signs: $10 + 5 - 20$. Result: $15 - 20 = -5$.

8. Calculate: $7 + 6 \times 3$

Solution

Multiplication first: $6 \times 3 = 18$. Then $7 + 18 = 25$.

9. Calculate: $50 - 5^2$

Solution

Indices first: $5^2 = 25$. Then $50 - 25 = 25$.

10. Calculate: $(12 - 5) \times 4$

Solution

Brackets first: $12 - 5 = 7$. Then $7 \times 4 = 28$.

11. Calculate: $24 \div 4 \times 2$

Solution

Left to Right: $24 \div 4 = 6$. Then $6 \times 2 = 12$.

12. Calculate: $20 - 15 + 5$

Solution

Left to Right: $20 - 15 = 5$. Then $5 + 5 = 10$.

13. Calculate: $3 + 4 \times (10 - 7)$

Solution

Brackets: $10 - 7 = 3$. Multiply: $4 \times 3 = 12$. Add: $3 + 12 = 15$.

14. Calculate: $40 - 10 \times 2 + 15 \div 3$

Solution

Multiply/Divide first: 20 and 5. Equation: $40 - 20 + 5 = 25$.

15. Calculate: $-5 + 3 \times (4 - 9)$

Solution

Brackets: -5. Multiply: $3 \times -5 = -15$. Add: $-5 + (-15) = -20$.

2 Fractions

1. Simplify the fraction $\frac{8}{12}$.

Solution

Divide both by 4. Answer: $\frac{2}{3}$.

2. Simplify the fraction $\frac{15}{25}$.

Solution

Divide both by 5. Answer: $\frac{3}{5}$.

3. Simplify the fraction $\frac{18}{24}$.

Solution

Divide both by 6. Answer: $\frac{3}{4}$.

4. Simplify the fraction $\frac{24}{36}$.

Solution

Divide both by 12. Answer: $\frac{2}{3}$.

5. Simplify the fraction $\frac{42}{56}$.

Solution

Divide both by 14 (or 7 then 2). Answer: $\frac{3}{4}$.

6. Calculate: $\frac{2}{9} + \frac{5}{9}$

Solution

$2 + 5 = 7$. Answer: $\frac{7}{9}$.

7. Calculate: $\frac{3}{4} - \frac{1}{8}$

Solution

Common denominator 8. $\frac{6}{8} - \frac{1}{8} = \frac{5}{8}$.

8. Calculate: $\frac{1}{3} + \frac{2}{5}$

Solution

Common denominator 15. $\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$.

9. Calculate: $\frac{7}{8} - \frac{1}{6}$

Solution

Common denominator 24. $\frac{21}{24} - \frac{4}{24} = \frac{17}{24}$.

10. Calculate: $\frac{1}{2} + \frac{1}{4} + \frac{1}{8}$

Solution

Common denominator 8. $\frac{4}{8} + \frac{2}{8} + \frac{1}{8} = \frac{7}{8}$.

11. Calculate: $\frac{3}{7} \times \frac{2}{5}$

Solution

$3 \times 2 = 6$. $7 \times 5 = 35$. Answer: $\frac{6}{35}$.

12. Calculate: $\frac{3}{4} \times \frac{2}{3}$

Solution

$\frac{6}{12}$. Simplify to $\frac{1}{2}$.

13. Calculate: $5 \times \frac{3}{4}$

Solution

$\frac{15}{4}$ (or $3\frac{3}{4}$).

14. Calculate: $\frac{4}{9} \times \frac{3}{8}$

Solution

$\frac{12}{72}$. Simplify to $\frac{1}{6}$.

15. Calculate: $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{5}$

Solution

$\frac{6}{30}$. Simplify to $\frac{1}{5}$.

16. Calculate: $\frac{2}{3} \div \frac{1}{5}$

Solution

Flip to $\frac{5}{1}$. $\frac{2}{3} \times 5 = \frac{10}{3}$.

17. Calculate: $\frac{3}{7} \div \frac{2}{3}$

Solution

Flip to $\frac{3}{2}$. $\frac{3}{7} \times \frac{3}{2} = \frac{9}{14}$.

18. Calculate: $4 \div \frac{1}{3}$

Solution

Flip to $\frac{3}{1}$. $4 \times 3 = 12$.

19. Calculate: $\frac{5}{8} \div 2$

Solution

Flip 2 to $\frac{1}{2}$. $\frac{5}{8} \times \frac{1}{2} = \frac{5}{16}$.

20. Calculate: $\frac{4}{5} \div \frac{8}{15}$

Solution

Flip to $\frac{15}{8}$. $\frac{60}{40}$. Simplify to $\frac{3}{2}$.

21. Convert $2\frac{1}{4}$ to an improper fraction and multiply by $\frac{2}{3}$.

Solution

$\frac{9}{4} \times \frac{2}{3} = \frac{18}{12}$. Simplify to $\frac{3}{2}$.

22. Calculate: $(\frac{2}{5})^2$

Solution

$\frac{2}{5} \times \frac{2}{5} = \frac{4}{25}$.

23. Calculate: $\frac{1}{2} + \frac{1}{3} \times \frac{1}{2}$

Solution

Multiply first: $\frac{1}{6}$. Add: $\frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$.

24. Calculate: $(\frac{1}{2} + \frac{1}{4}) \div \frac{3}{8}$

Solution

Brackets: $\frac{3}{4}$. Divide: $\frac{3}{4} \times \frac{8}{3} = \frac{24}{12} = 2$.

25. Calculate: $1\frac{1}{2} \div 2\frac{1}{4}$

Solution

$\frac{3}{2} \div \frac{9}{4} \rightarrow \frac{3}{2} \times \frac{4}{9} = \frac{12}{18}$. Simplify to $\frac{2}{3}$.

3 Percentages

1. Convert $\frac{4}{5}$ to a percentage.

Solution

$4 \div 5 \times 100 = 80\%$.

2. Convert $\frac{5}{8}$ to a percentage.

Solution

$5 \div 8 \times 100 = 62.5\%$.

3. Convert $\frac{13}{20}$ to a percentage.

Solution

$13 \div 20 \times 100 = 65\%$.

4. Convert $\frac{7}{40}$ to a percentage.

Solution

$7 \div 40 \times 100 = 17.5\%$.

5. Convert $\frac{19}{25}$ to a percentage.

Solution

$19 \div 25 \times 100 = 76\%$.

6. Calculate 15% of 60.

Solution

$0.15 \times 60 = 9$.

7. Calculate 45% of 240.

Solution

$0.45 \times 240 = 108$.

8. Calculate 6% of 350.

Solution

$0.06 \times 350 = 21$.

9. Calculate 12.5% of 80.

Solution

$0.125 \times 80 = 10$.

10. Calculate 95% of 200.

Solution

$0.95 \times 200 = 190$.

11. Calculate the percentage increase from 40 to 46.

Solution

Difference is 6. $6 \div 40 = 0.15$ (15%).

12. Calculate the percentage decrease from 80 to 60.

Solution

Difference is 20. $20 \div 80 = 0.25$ (25%).

13. Calculate the percentage increase from 25 to 75.

Solution

Difference is 50. $50 \div 25 = 2$ (200%).

14. A price falls from 200 to 190. What is the percentage decrease?

Solution

Difference is 10. $10 \div 200 = 0.05$ (5%).

15. A population grows from 1,500 to 1,800. What is the percentage growth?

Solution

Difference is 300. $300 \div 1500 = 0.2$ (20%).

16. Increase 250 by 12%.

Solution

$250 \times 1.12 = 280$.

17. Decrease 400 by 15%.

Solution

$400 \times 0.85 = 340.$

18. Increase 45 by 4%.

Solution

$45 \times 1.04 = 46.8.$

19. Decrease 120 by 2.5%.

Solution

$120 \times 0.975 = 117.$

20. A salary of 24,000 is increased by 3.5%. What is the new salary?

Solution

$24000 \times 1.035 = 24840.$

21. A number is increased by 10% and the result is 55. Calculate the original number.

Solution

$55 \div 1.1 = 50.$

22. After a decrease of 20%, a price is 64. Calculate the original price.

Solution

$64 \div 0.8 = 80.$

23. An item is sold for 230 which includes a 15% profit. What was the cost price?

Solution

$230 \div 1.15 = 200.$

24. Water volume decreases by 5% to 190 litres. What was the original volume?

Solution

$190 \div 0.95 = 200.$

25. After a massive 150% increase, a value is 500. What was the original value?

Solution

$500 \div 2.5 = 200.$

4 Standard Form

1. Write 3×10^2 as an ordinary number.

Solution

300

2. Write 5.2×10^3 as an ordinary number.

Solution

5200

3. Write 1.45×10^4 as an ordinary number.

Solution

14500

4. Write 6×10^5 as an ordinary number.

Solution

600,000

5. Write 9.02×10^4 as an ordinary number.

Solution

90200

6. Write 4000 in Standard Form.

Solution

4×10^3

7. Write 250 in Standard Form.

Solution

2.5×10^2

8. Write 8,000,000 in Standard Form.

Solution

8×10^6

9. Write 52,100 in Standard Form.

Solution

5.21×10^4

10. Write 19,500,000 in Standard Form.

Solution

1.95×10^7

11. Write 5×10^{-1} as an ordinary number.

Solution

0.5

12. Write 2×10^{-3} as an ordinary number.

Solution

0.002

13. Write 4.5×10^{-2} as an ordinary number.

Solution

0.045

14. Write 1.23×10^{-4} as an ordinary number.

Solution

0.000123

15. Write 9.9×10^{-3} as an ordinary number.

Solution

0.0099

16. Write 0.006 in Standard Form.

Solution

6×10^{-3}

17. Write 0.04 in Standard Form.

Solution

4×10^{-2}

18. Write 0.000052 in Standard Form.

Solution

5.2×10^{-5}

19. Write 0.00105 in Standard Form.

Solution

1.05×10^{-3}

20. Write 0.0000009 in Standard Form.

Solution

9×10^{-7}

5 Numeracy Problems

1. A coffee shop generates £4,500 in revenue this month. The cost of coffee beans, milk, and rent totals £3,250. Calculate the profit.

Solution

$4500 - 3250 = £1250.$

2. A startup spends £12,000 on development but only makes £4,500 in sales. What is their profit?

Solution

$4500 - 12000 = -£7500$ (Loss).

3. A laptop costs £800 excluding VAT. VAT is charged at 20%. Calculate the total price including VAT.

Solution

$800 \times 1.20 = £960.$

4. A supplier offers a 15% trade discount on an order of £2,000. What is the discounted price?

Solution

$2000 \times 0.85 = £1700.$

5. A service bill is £144, which includes VAT at 20%. Calculate the cost *before* VAT was added.

Solution

$144 \div 1.20 = £120.$

6. Inventory Valuation: Calculate the total cost for each item line, and then the Grand Total.

Item	Quantity	Unit Cost (£)	Total Cost (£)
Hard Drives	10	45.50	**455.00**
Monitors	5	120.00	**600.00**
Keyboards	20	15.25	**305.00**
GRAND TOTAL			**1,360.00**

7. A tech company is valued at £45,000,000. Write this in Standard Form.

Solution

4.5×10^7.

8. The GDP of a country is £2.8 Trillion (£2,800,000,000,000). Write this in Standard Form.

Solution

2.8×10^{12}.

9. A budget deficit is listed as 1.2×10^5. Write this as an ordinary number.

Solution

120,000.

10. Supplier Selection: You need to buy 50 office chairs. Supplier A charges £40 per chair. Supplier B charges £50 per chair but offers a 25% discount on the total order. What is the **difference in total price** between the two suppliers?

Solution

A: £2000. B: £1875. Difference: £125.

11. Reconciling a Bank Statement: Fill in the missing values.

Date	Description	Money In	Money Out	Balance
01 Jan	Opening Balance	—	—	**£1,200**
05 Jan	Office Rent		500	**700**
10 Jan	Client Payment	**800**		**£1,500**
15 Jan	Staff Wages		**600**	**£900**
20 Jan	Utility Bill		150	**750**

12. **Break-Even Analysis**: A bakery has fixed monthly costs of £2,000. They sell cakes for £5.00 each. It costs them £1.00 in ingredients to make each cake. How many cakes must they sell to cover their costs?

    Solution

    Profit/cake £4. $2000 \div 4 = 500$ cakes.

13. **Commission**: A salesperson earns a basic salary of £1,500 per month. They also earn 10% commission on any sales **above** £10,000. In March, they made £18,000 in sales. Calculate their total pay for the month.

    Solution

    Commission on 8000 is 800. Total £2,300.

14. **Importing**: A UK business buys a machine from the USA for $6,000 (USD). The exchange rate is £1 = $1.25. The shipping company charges a flat fee of £200. What is the total cost in Pounds Sterling (£)?

    Solution

    $6000 \div 1.25 = 4800$. Total £5,000.

15. **Net Pay**: An employee's gross monthly pay is £3,000. Income Tax is calculated as 20% of their earnings **after** a tax-free allowance of £1,000 is deducted. Calculate their Net Pay.

    Solution

    Tax on 2000 is 400. Net Pay £2,600.