

Grade 7 Math Workbook

18 lessons · printable · answer key at the back

Name _____

Date _____

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Positive and Negative Numbers

WORKED EXAMPLE

$$-70 + 41 = \underline{-29}$$

1. Add and subtract integers

Add or subtract the integers.

- | | | |
|--|--|---|
| 1 $-28 + 3 = \underline{\hspace{2cm}}$ | 2 $-36 + 37 = \underline{\hspace{2cm}}$ | 3 $-87 + 78 = \underline{\hspace{2cm}}$ |
| 4 $7 - 23 = \underline{\hspace{2cm}}$ | 5 $-66 + 38 = \underline{\hspace{2cm}}$ | 6 $-1 + 69 = \underline{\hspace{2cm}}$ |
| 7 $-22 + 29 = \underline{\hspace{2cm}}$ | 8 $-78 + 45 = \underline{\hspace{2cm}}$ | 9 $68 - 72 = \underline{\hspace{2cm}}$ |
| 10 $-4 + 45 = \underline{\hspace{2cm}}$ | 11 $-47 + 73 = \underline{\hspace{2cm}}$ | 12 $-8 + 34 = \underline{\hspace{2cm}}$ |
| 13 $-48 + 18 = \underline{\hspace{2cm}}$ | 14 $29 - 45 = \underline{\hspace{2cm}}$ | 15 $-31 + 20 = \underline{\hspace{2cm}}$ |
| 16 $-42 + 37 = \underline{\hspace{2cm}}$ | 17 $30 - 57 = \underline{\hspace{2cm}}$ | 18 $-17 + 19 = \underline{\hspace{2cm}}$ |
| 19 $-22 + 39 = \underline{\hspace{2cm}}$ | 20 $-55 + 61 = \underline{\hspace{2cm}}$ | 21 $-74 + 5 = \underline{\hspace{2cm}}$ |
| 22 $-84 + 92 = \underline{\hspace{2cm}}$ | 23 $-17 + 15 = \underline{\hspace{2cm}}$ | 24 $-63 + 49 = \underline{\hspace{2cm}}$ |
| 25 $-38 + 15 = \underline{\hspace{2cm}}$ | 26 $-1 + 28 = \underline{\hspace{2cm}}$ | 27 $-45 + 66 = \underline{\hspace{2cm}}$ |
| 28 $-17 + 35 = \underline{\hspace{2cm}}$ | 29 $-46 + 29 = \underline{\hspace{2cm}}$ | 30 $-100 + 64 = \underline{\hspace{2cm}}$ |
| 31 $-67 + 17 = \underline{\hspace{2cm}}$ | 32 $3 - 67 = \underline{\hspace{2cm}}$ | 33 $-59 + 34 = \underline{\hspace{2cm}}$ |
| 34 $-58 + 8 = \underline{\hspace{2cm}}$ | 35 $-80 + 63 = \underline{\hspace{2cm}}$ | 36 $-24 + 31 = \underline{\hspace{2cm}}$ |
| 37 $-34 + 13 = \underline{\hspace{2cm}}$ | 38 $3 - 52 = \underline{\hspace{2cm}}$ | 39 $-14 + 47 = \underline{\hspace{2cm}}$ |
| 40 $39 - 40 = \underline{\hspace{2cm}}$ | 41 $-34 + 3 = \underline{\hspace{2cm}}$ | 42 $-5 + 94 = \underline{\hspace{2cm}}$ |
| 43 $-26 + 11 = \underline{\hspace{2cm}}$ | 44 $16 - 25 = \underline{\hspace{2cm}}$ | 45 $-92 + 76 = \underline{\hspace{2cm}}$ |
| 46 $-42 + 23 = \underline{\hspace{2cm}}$ | 47 $-18 + 14 = \underline{\hspace{2cm}}$ | 48 $21 - 48 = \underline{\hspace{2cm}}$ |
| 49 $20 - 22 = \underline{\hspace{2cm}}$ | 50 $-7 + 36 = \underline{\hspace{2cm}}$ | |

Multiplying and Dividing Integers

WORKED EXAMPLE

$$-54 \div (-9) = \underline{6}$$

2. Multiplying and dividing integers

Multiply or divide. Remember what two negative signs make.

- | | | |
|--|--|---|
| 1 $-18 \div 2 = \underline{\hspace{2cm}}$ | 2 $-18 \div 3 = \underline{\hspace{2cm}}$ | 3 $-40 \div (-4) = \underline{\hspace{2cm}}$ |
| 4 $-72 \div 6 = \underline{\hspace{2cm}}$ | 5 $-4 \times 5 = \underline{\hspace{2cm}}$ | 6 $-72 \div 12 = \underline{\hspace{2cm}}$ |
| 7 $-60 \div (-10) = \underline{\hspace{2cm}}$ | 8 $-11 \times (-3) = \underline{\hspace{2cm}}$ | 9 $-4 \times 7 = \underline{\hspace{2cm}}$ |
| 10 $2 \times (-6) = \underline{\hspace{2cm}}$ | 11 $-99 \div (-9) = \underline{\hspace{2cm}}$ | 12 $-2 \times 6 = \underline{\hspace{2cm}}$ |
| 13 $-3 \times 7 = \underline{\hspace{2cm}}$ | 14 $-7 \times 10 = \underline{\hspace{2cm}}$ | 15 $3 \times (-4) = \underline{\hspace{2cm}}$ |
| 16 $108 \div (-12) = \underline{\hspace{2cm}}$ | 17 $-36 \div 3 = \underline{\hspace{2cm}}$ | 18 $-88 \div (-8) = \underline{\hspace{2cm}}$ |
| 19 $-49 \div (-7) = \underline{\hspace{2cm}}$ | 20 $-60 \div 6 = \underline{\hspace{2cm}}$ | 21 $-30 \div 10 = \underline{\hspace{2cm}}$ |
| 22 $7 \times (-8) = \underline{\hspace{2cm}}$ | 23 $-6 \div 3 = \underline{\hspace{2cm}}$ | 24 $8 \times (-8) = \underline{\hspace{2cm}}$ |

Ratio and Proportion

WORKED EXAMPLE

\$24 for 3 = \$8 each

3. Unit rates

Find the unit rate for each.

- | | | |
|---------------------------|---------------------------|---------------------------|
| 1 \$15 for 5 = ____ each | 2 \$48 for 6 = ____ each | 3 \$32 for 8 = ____ each |
| 4 \$42 for 6 = ____ each | 5 \$48 for 4 = ____ each | 6 \$40 for 4 = ____ each |
| 7 \$27 for 3 = ____ each | 8 \$6 for 2 = ____ each | 9 \$80 for 8 = ____ each |
| 10 \$54 for 6 = ____ each | 11 \$48 for 8 = ____ each | 12 \$16 for 2 = ____ each |
| 13 \$45 for 5 = ____ each | 14 \$24 for 6 = ____ each | 15 \$14 for 2 = ____ each |
| 16 \$64 for 8 = ____ each | 17 \$12 for 2 = ____ each | 18 \$40 for 5 = ____ each |
| 19 \$22 for 2 = ____ each | 20 \$33 for 3 = ____ each | 21 \$30 for 3 = ____ each |
| 22 \$20 for 2 = ____ each | 23 \$12 for 3 = ____ each | 24 \$28 for 4 = ____ each |
| 25 \$9 for 3 = ____ each | 26 \$12 for 4 = ____ each | 27 \$56 for 7 = ____ each |
| 28 \$15 for 3 = ____ each | 29 \$60 for 6 = ____ each | 30 \$35 for 7 = ____ each |
| 31 \$44 for 4 = ____ each | 32 \$42 for 7 = ____ each | 33 \$14 for 7 = ____ each |
| 34 \$16 for 8 = ____ each | | |

4. Proportions

Find the missing number in each proportion.

- | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 35 1 : ____ = 8 : 16 | 36 5 : 6 = 30 : ____ | 37 1 : ____ = 2 : 4 | 38 5 : ____ = 10 : 16 |
| 39 5 : 8 = 40 : ____ | 40 1 : ____ = 4 : 16 | 41 3 : ____ = 18 : 48 | 42 3 : ____ = 6 : 8 |
| 43 3 : 7 = 21 : ____ | 44 2 : ____ = 16 : 24 | 45 3 : ____ = 18 : 24 | 46 3 : 8 = 9 : ____ |
| 47 1 : ____ = 2 : 12 | 48 3 : 7 = 9 : ____ | 49 5 : ____ = 15 : 18 | 50 1 : 6 = 3 : ____ |
| 51 3 : 7 = 15 : ____ | 52 2 : 3 = 12 : ____ | 53 5 : 6 = 25 : ____ | 54 5 : 6 = 20 : ____ |
| 55 3 : ____ = 12 : 16 | 56 3 : ____ = 15 : 25 | 57 3 : ____ = 18 : 30 | 58 1 : 3 = 7 : ____ |
| 59 1 : 3 = 4 : ____ | 60 3 : 7 = 24 : ____ | 61 1 : ____ = 8 : 48 | 62 1 : 3 = 5 : ____ |
| 63 2 : 3 = 10 : ____ | 64 3 : 8 = 6 : ____ | 65 2 : ____ = 16 : 40 | 66 3 : ____ = 21 : 56 |
| 67 2 : 3 = 6 : ____ | 68 3 : ____ = 12 : 28 | | |

Percent Problems

WORKED EXAMPLE

40% more than 115 = 161

5. Percent

Work out each new amount.

- | | |
|-----------------------------|-----------------------------|
| 1 75% more than 64 = ____ | 2 20% more than 65 = ____ |
| 3 20% more than 25 = ____ | 4 50% more than 200 = ____ |
| 5 50% more than 74 = ____ | 6 80% more than 145 = ____ |
| 7 75% more than 180 = ____ | 8 50% more than 36 = ____ |
| 9 40% more than 85 = ____ | 10 50% more than 158 = ____ |
| 11 50% more than 6 = ____ | 12 10% more than 100 = ____ |
| 13 25% more than 124 = ____ | 14 10% more than 40 = ____ |
| 15 25% more than 84 = ____ | 16 50% more than 34 = ____ |
| 17 75% more than 192 = ____ | 18 25% more than 92 = ____ |
| 19 20% more than 145 = ____ | 20 40% more than 190 = ____ |
| 21 40% more than 95 = ____ | 22 10% more than 130 = ____ |
| 23 25% more than 60 = ____ | 24 80% more than 140 = ____ |
| 25 75% more than 16 = ____ | 26 10% more than 10 = ____ |
| 27 20% more than 130 = ____ | 28 20% more than 10 = ____ |
| 29 50% more than 54 = ____ | 30 60% more than 105 = ____ |
| 31 60% more than 110 = ____ | 32 80% more than 25 = ____ |
| 33 80% more than 175 = ____ | 34 80% more than 35 = ____ |
| 35 20% more than 110 = ____ | 36 20% more than 160 = ____ |
| 37 40% more than 170 = ____ | 38 75% more than 168 = ____ |
| 39 40% more than 110 = ____ | 40 60% more than 95 = ____ |
| 41 75% more than 148 = ____ | 42 50% more than 2 = ____ |
| 43 20% more than 85 = ____ | 44 10% more than 190 = ____ |

Decimal Operations

WORKED EXAMPLE

$$12.0 \div 3 = \underline{4.0}$$

6. Multiply and divide decimals

Multiply or divide the decimals.

- | | | |
|-------------------------------|-------------------------------|------------------------------|
| 1 $5.6 \div 4 =$ _____ | 2 $29.76 \div 3 =$ _____ | 3 $3.0 \times 5 =$ _____ |
| 4 $7.8 \div 2 =$ _____ | 5 $5.26 \times 9 =$ _____ | 6 $45.0 \div 10 =$ _____ |
| 7 $34.10 \div 5 =$ _____ | 8 $0.43 \times 4 =$ _____ | 9 $37.2 \div 12 =$ _____ |
| 10 $10.76 \div 2 =$ _____ | 11 $37.8 \div 9 =$ _____ | 12 $9.51 \times 2 =$ _____ |
| 13 $11.6 \times 11 =$ _____ | 14 $18.9 \div 7 =$ _____ | 15 $27.5 \div 11 =$ _____ |
| 16 $93.06 \div 9 =$ _____ | 17 $8.84 \times 0.78 =$ _____ | 18 $50.4 \div 12 =$ _____ |
| 19 $3.8 \times 2 =$ _____ | 20 $4.5 \times 1.6 =$ _____ | 21 $86.9 \div 11 =$ _____ |
| 22 $5.70 \times 2.89 =$ _____ | 23 $2.9 \times 2.9 =$ _____ | 24 $1.2 \div 4 =$ _____ |
| 25 $64.8 \div 8 =$ _____ | 26 $8.3 \times 1.8 =$ _____ | 27 $33.48 \div 6 =$ _____ |
| 28 $49.5 \div 5 =$ _____ | 29 $9.9 \div 3 =$ _____ | 30 $8.9 \times 4 =$ _____ |
| 31 $0.95 \times 4.74 =$ _____ | 32 $46.8 \div 4 =$ _____ | 33 $0.81 \times 8 =$ _____ |
| 34 $55.2 \div 6 =$ _____ | 35 $0.6 \div 6 =$ _____ | 36 $8.1 \times 3.7 =$ _____ |
| 37 $0.93 \times 11 =$ _____ | 38 $59.4 \div 11 =$ _____ | 39 $82.4 \div 8 =$ _____ |
| 40 $3.4 \times 1.5 =$ _____ | 41 $2.04 \times 0.15 =$ _____ | 42 $31.5 \div 7 =$ _____ |
| 43 $10.2 \times 12 =$ _____ | 44 $14.5 \div 5 =$ _____ | 45 $8.0 \times 0.17 =$ _____ |
| 46 $14.80 \div 10 =$ _____ | 47 $27.20 \div 5 =$ _____ | 48 $36.0 \div 12 =$ _____ |
| 49 $6.69 \times 8.6 =$ _____ | 50 $32.9 \div 7 =$ _____ | |

Fraction Operations

WORKED EXAMPLE

$$\frac{6}{8} \times \frac{5}{6} = \frac{5}{8}$$

7. Multiplying and dividing fractions

Multiply or divide. Write each answer in simplest form.

- | | | | |
|--|--|--|--|
| 1 $\frac{6}{7} \times \frac{3}{6} = \text{—}$ | 2 $\frac{5}{8} \div \frac{1}{8} = \text{—}$ | 3 $\frac{7}{8} \times \frac{1}{6} = \text{—}$ | 4 $\frac{3}{6} \times \frac{1}{4} = \text{—}$ |
| 5 $\frac{5}{6} \div \frac{1}{7} = \text{—}$ | 6 $\frac{6}{8} \times \frac{4}{6} = \text{—}$ | 7 $\frac{4}{8} \times \frac{3}{5} = \text{—}$ | 8 $\frac{1}{5} \div \frac{3}{8} = \text{—}$ |
| 9 $\frac{1}{4} \times \frac{4}{8} = \text{—}$ | 10 $\frac{5}{6} \div \frac{1}{3} = \text{—}$ | 11 $\frac{1}{2} \times \frac{2}{4} = \text{—}$ | 12 $\frac{1}{4} \times \frac{1}{8} = \text{—}$ |
| 13 $\frac{2}{4} \div \frac{5}{7} = \text{—}$ | 14 $\frac{3}{5} \times \frac{4}{7} = \text{—}$ | 15 $\frac{2}{3} \div \frac{6}{7} = \text{—}$ | 16 $\frac{4}{6} \times \frac{3}{8} = \text{—}$ |
| 17 $\frac{3}{6} \times \frac{4}{8} = \text{—}$ | 18 $\frac{1}{7} \div \frac{1}{6} = \text{—}$ | 19 $\frac{4}{6} \times \frac{3}{6} = \text{—}$ | 20 $\frac{1}{8} \div \frac{5}{8} = \text{—}$ |
| 21 $\frac{7}{8} \times \frac{3}{5} = \text{—}$ | 22 $\frac{2}{5} \times \frac{2}{8} = \text{—}$ | 23 $\frac{1}{3} \div \frac{4}{8} = \text{—}$ | 24 $\frac{3}{6} \times \frac{1}{5} = \text{—}$ |
| 25 $\frac{1}{8} \div \frac{3}{5} = \text{—}$ | 26 $\frac{1}{7} \times \frac{1}{6} = \text{—}$ | 27 $\frac{3}{8} \div \frac{6}{7} = \text{—}$ | 28 $\frac{5}{6} \times \frac{3}{5} = \text{—}$ |
| 29 $\frac{5}{6} \times \frac{1}{8} = \text{—}$ | 30 $\frac{2}{5} \div \frac{3}{8} = \text{—}$ | 31 $\frac{3}{8} \times \frac{3}{5} = \text{—}$ | 32 $\frac{7}{8} \div \frac{3}{7} = \text{—}$ |
| 33 $\frac{2}{6} \times \frac{5}{7} = \text{—}$ | 34 $\frac{1}{5} \times \frac{4}{8} = \text{—}$ | 35 $\frac{3}{6} \div \frac{1}{2} = \text{—}$ | 36 $\frac{1}{4} \times \frac{4}{7} = \text{—}$ |
| 37 $\frac{2}{8} \div \frac{1}{5} = \text{—}$ | 38 $\frac{2}{6} \times \frac{1}{8} = \text{—}$ | 39 $\frac{2}{7} \div \frac{1}{2} = \text{—}$ | 40 $\frac{1}{8} \times \frac{2}{6} = \text{—}$ |
| 41 $\frac{1}{4} \times \frac{1}{6} = \text{—}$ | 42 $\frac{3}{5} \div \frac{4}{6} = \text{—}$ | 43 $\frac{4}{5} \times \frac{4}{8} = \text{—}$ | 44 $\frac{3}{7} \div \frac{2}{5} = \text{—}$ |

Solving Equations

WORKED EXAMPLE

$$5x + 17 = 22 \quad \underline{1}$$

8. Solving equations

Solve each equation for x .

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| 1 $5x + 13 = 18$ <u> </u> | 2 $5x - 20 = 5$ <u> </u> | 3 $9x - 10 = 8$ <u> </u> |
| 4 $5x + 4 = 19$ <u> </u> | 5 $3x + 5 = 32$ <u> </u> | 6 $5x + 23 = 48$ <u> </u> |
| 7 $5x - 18 = 2$ <u> </u> | 8 $5x + 31 = 46$ <u> </u> | 9 $4x + 20 = 40$ <u> </u> |
| 10 $2x + 17 = 47$ <u> </u> | 11 $3x - 9 = 3$ <u> </u> | 12 $5x + 15 = 50$ <u> </u> |
| 13 $5x + 16 = 36$ <u> </u> | 14 $3x + 1 = 34$ <u> </u> | 15 $6x + 14 = 20$ <u> </u> |
| 16 $7x + 6 = 41$ <u> </u> | 17 $4x + 5 = 9$ <u> </u> | 18 $2x - 25 = 23$ <u> </u> |
| 19 $9x + 1 = 10$ <u> </u> | 20 $6x - 37 = 5$ <u> </u> | 21 $4x - 9 = 39$ <u> </u> |
| 22 $12x + 2 = 50$ <u> </u> | 23 $3x + 3 = 18$ <u> </u> | 24 $4x + 21 = 29$ <u> </u> |
| 25 $3x + 7 = 37$ <u> </u> | 26 $3x + 9 = 27$ <u> </u> | 27 $3x + 19 = 28$ <u> </u> |
| 28 $10x - 14 = 6$ <u> </u> | 29 $3x - 24 = 9$ <u> </u> | 30 $4x - 7 = 21$ <u> </u> |
| 31 $2x + 19 = 21$ <u> </u> | 32 $2x - 17 = 17$ <u> </u> | 33 $2x + 5 = 19$ <u> </u> |
| 34 $7x - 7 = 7$ <u> </u> | 35 $4x + 8 = 16$ <u> </u> | 36 $5x - 9 = 26$ <u> </u> |
| 37 $2x - 33 = 11$ <u> </u> | 38 $7x + 12 = 40$ <u> </u> | 39 $7x - 5 = 30$ <u> </u> |
| 40 $4x + 6 = 46$ <u> </u> | 41 $6x - 6 = 6$ <u> </u> | 42 $10x + 3 = 23$ <u> </u> |
| 43 $6x + 1 = 49$ <u> </u> | 44 $5x - 2 = 43$ <u> </u> | 45 $11x - 14 = 8$ <u> </u> |
| 46 $6x - 24 = 12$ <u> </u> | 47 $2x + 8 = 42$ <u> </u> | 48 $11x - 27 = 6$ <u> </u> |
| 49 $3x + 7 = 31$ <u> </u> | 50 $11x - 42 = 2$ <u> </u> | |

Inequalities

WORKED EXAMPLE

$$2x + 6 \leq -14 \quad x \boxed{\leq} -10$$

9. Inequalities

Solve each one, then write $>$, $<$, $\geq$ or $\leq$ in the box.

1 $7x + 11 < 4 \quad x \boxed{\phantom{<}} -1$

3 $6x + 2 > -22 \quad x \boxed{\phantom{<}} -4$

5 $3x + 6 \leq 24 \quad x \boxed{\phantom{<}} 6$

7 $6x + 1 \leq -23 \quad x \boxed{\phantom{<}} -4$

9 $7x + 3 < -74 \quad x \boxed{\phantom{<}} -11$

11 $8x + 6 < 54 \quad x \boxed{\phantom{<}} 6$

13 $-8x + 8 \geq -80 \quad x \boxed{\phantom{<}} 11$

15 $2x + 1 \geq -69 \quad x \boxed{\phantom{<}} -35$

17 $-3x + 2 > -73 \quad x \boxed{\phantom{<}} 25$

2 $-5x + 2 > -23 \quad x \boxed{\phantom{<}} 5$

4 $-8x + 1 \geq 97 \quad x \boxed{\phantom{<}} -12$

6 $-8x + 6 < -34 \quad x \boxed{\phantom{<}} 5$

8 $-7x + 10 \leq -53 \quad x \boxed{\phantom{<}} 9$

10 $2x + 9 > 77 \quad x \boxed{\phantom{<}} 34$

12 $-3x + 5 > -10 \quad x \boxed{\phantom{<}} 5$

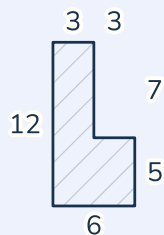
14 $9x + 8 > 35 \quad x \boxed{\phantom{<}} 3$

16 $8x + 5 < -19 \quad x \boxed{\phantom{<}} -3$

18 $4x + 4 \geq -40 \quad x \boxed{\phantom{<}} -11$

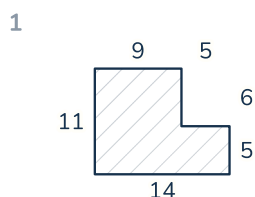
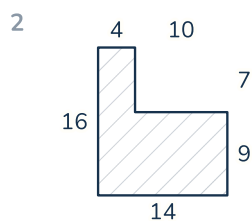
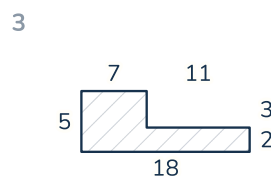
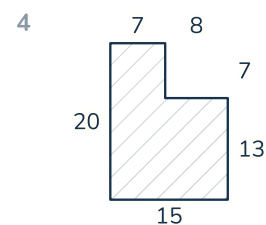
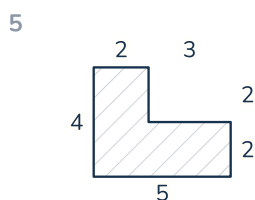
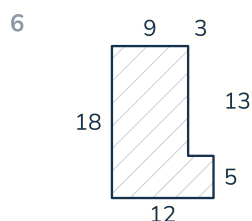
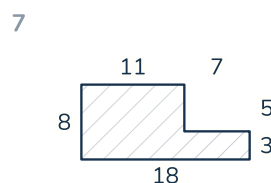
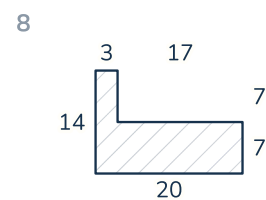
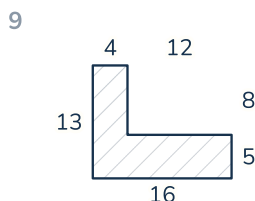
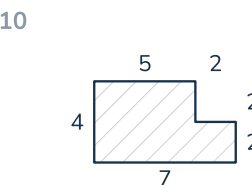
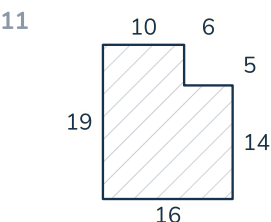
Area of Composite Shapes

WORKED EXAMPLE

**51** cm²

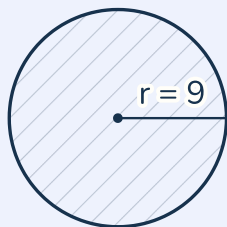
10. Area of composite figures

Find the area of each figure. All lengths are in centimeters.

_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²_____ cm²

Area of a Circle

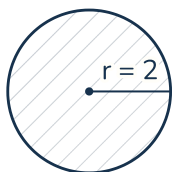
WORKED EXAMPLE


254.34 cm²

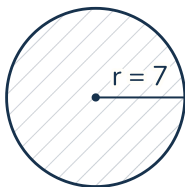
11. Area of a circle

Find the area of each circle. Use $\pi = 3.14$.

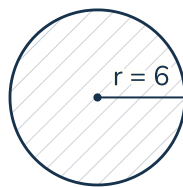
1

_____ cm²

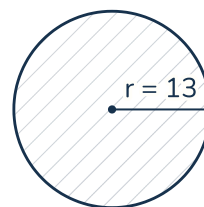
2

_____ cm²

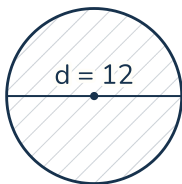
3

_____ cm²

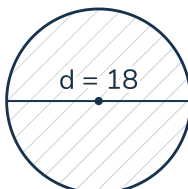
4

_____ cm²

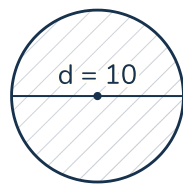
5

_____ cm²

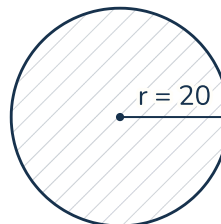
6

_____ cm²

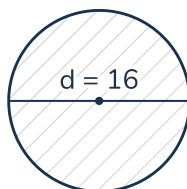
7

_____ cm²

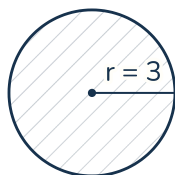
8

_____ cm²

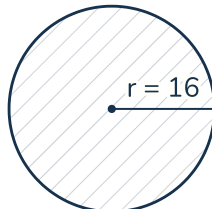
9

_____ cm²

10

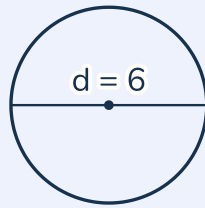
_____ cm²

11

_____ cm²

Circumference

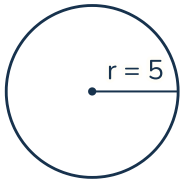
WORKED EXAMPLE

**18.84** cm

12. Circumference of a circle

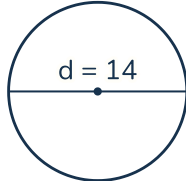
Find the circumference of each circle. Use $\pi = 3.14$.

1



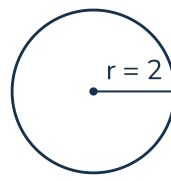
_____ cm

2



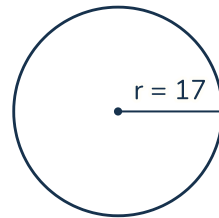
_____ cm

3



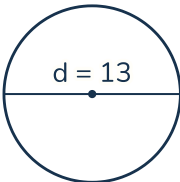
_____ cm

4



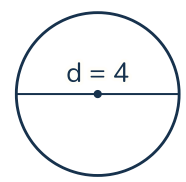
_____ cm

5



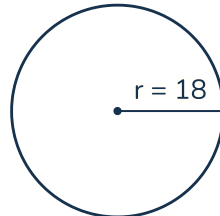
_____ cm

6



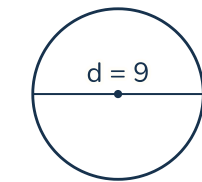
_____ cm

7



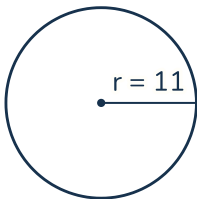
_____ cm

8



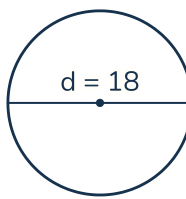
_____ cm

9



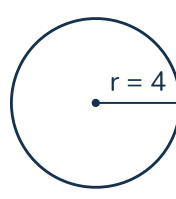
_____ cm

10



_____ cm

11



_____ cm

Angle Pairs

WORKED EXAMPLE



35 degrees

13. Missing angles in a pair

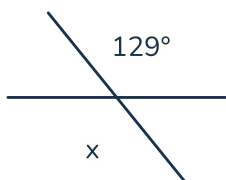
Find the angle marked x . Give each answer in degrees.

1



_____ degrees

2



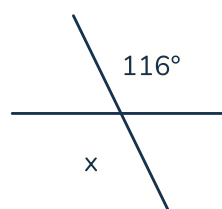
_____ degrees

3



_____ degrees

4



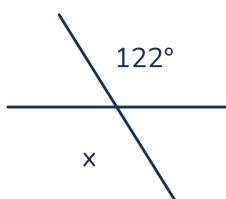
_____ degrees

5



_____ degrees

6



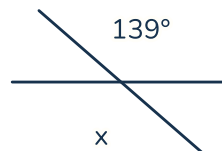
_____ degrees

7



_____ degrees

8



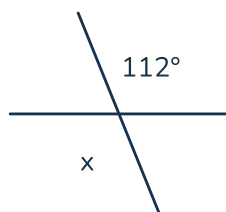
_____ degrees

9



_____ degrees

10



_____ degrees

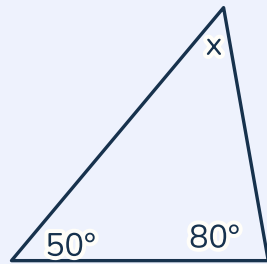
11



_____ degrees

Angles in a Triangle

WORKED EXAMPLE

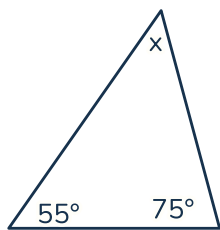


50 degrees

14. The third angle of a triangle

Find the angle marked x . Give each answer in degrees.

1



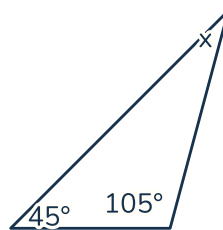
_____ degrees

2



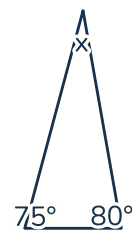
_____ degrees

3



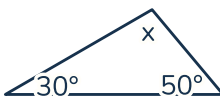
_____ degrees

4



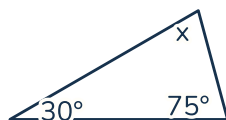
_____ degrees

5



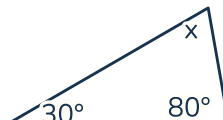
_____ degrees

6



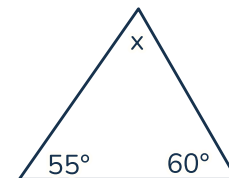
_____ degrees

7



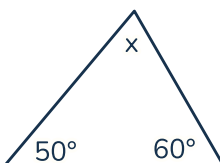
_____ degrees

8



_____ degrees

9



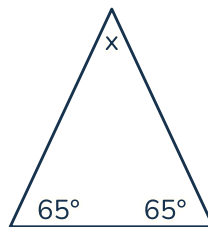
_____ degrees

10



_____ degrees

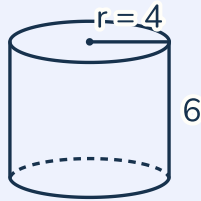
11



_____ degrees

Volume of Cylinders

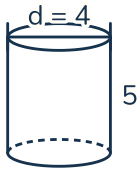
WORKED EXAMPLE

**301.44**

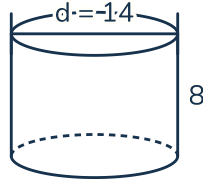
15. Volume of a cylinder

Find the volume of each cylinder. Use $\pi = 3.14$.

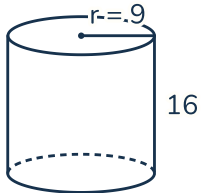
1



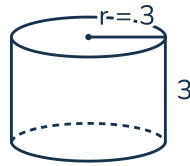
2



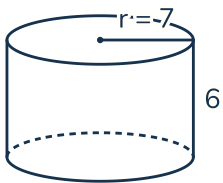
3



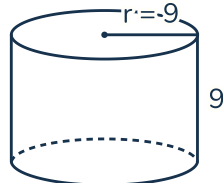
4



5



6

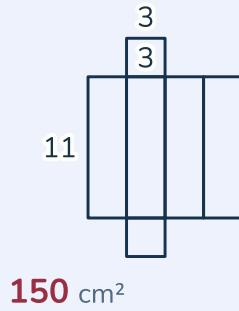


7



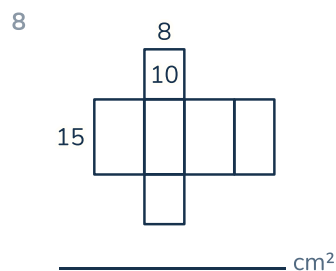
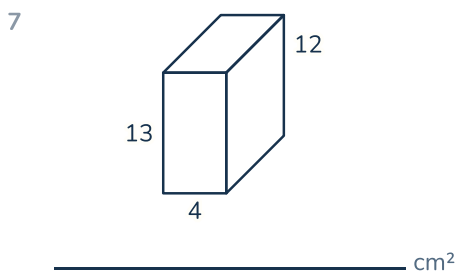
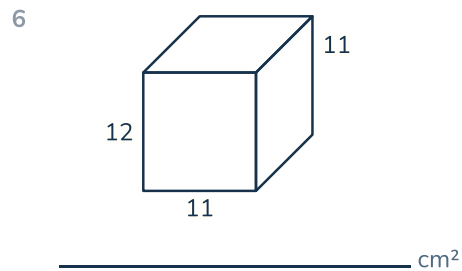
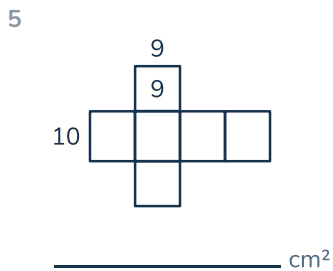
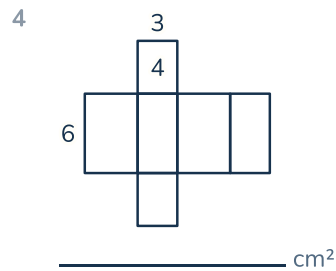
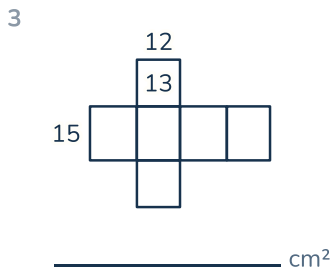
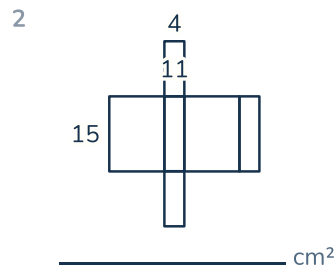
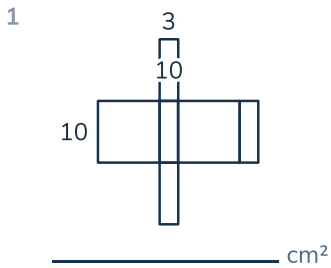
Surface Area

WORKED EXAMPLE



16. Surface area of a box

Find the surface area of each box. All lengths are in centimeters.



WORKED EXAMPLE

2 red, 5 blue, 5 green $P(\text{red})$ $\frac{1}{6}$

17. Probability of one event

Each bag holds these counters. Simplest form, and watch for NOT.

- | | | | | | | | |
|----|------------------------|----------------------|-------|----|------------------------|-----------------------|-------|
| 1 | 3 red, 7 blue, 2 green | $P(\text{red})$ | _____ | 2 | 2 red, 8 blue, 2 green | $P(\text{not blue})$ | _____ |
| 3 | 2 red, 4 blue, 6 green | $P(\text{not red})$ | _____ | 4 | 5 red, 3 blue, 4 green | $P(\text{green})$ | _____ |
| 5 | 5 red, 5 blue, 2 green | $P(\text{red})$ | _____ | 6 | 5 red, 3 blue, 4 green | $P(\text{not blue})$ | _____ |
| 7 | 3 red, 9 blue | $P(\text{blue})$ | _____ | 8 | 6 red, 3 blue, 3 green | $P(\text{not blue})$ | _____ |
| 9 | 3 red, 7 blue, 2 green | $P(\text{not blue})$ | _____ | 10 | 8 red, 2 blue, 2 green | $P(\text{red})$ | _____ |
| 11 | 5 red, 4 blue, 3 green | $P(\text{blue})$ | _____ | 12 | 2 red, 6 blue, 4 green | $P(\text{not red})$ | _____ |
| 13 | 4 red, 4 blue, 4 green | $P(\text{green})$ | _____ | 14 | 7 red, 3 blue, 2 green | $P(\text{not blue})$ | _____ |
| 15 | 5 red, 2 blue, 5 green | $P(\text{red})$ | _____ | 16 | 2 red, 7 blue, 3 green | $P(\text{not red})$ | _____ |
| 17 | 7 red, 2 blue, 3 green | $P(\text{red})$ | _____ | 18 | 7 red, 3 blue, 2 green | $P(\text{not green})$ | _____ |
| 19 | 3 red, 3 blue, 6 green | $P(\text{not red})$ | _____ | 20 | 4 red, 3 blue, 5 green | $P(\text{red})$ | _____ |

Probability Word Problems

WORKED EXAMPLE

A bag holds 2 yellow and 8 green counters. One is taken out without looking.

What is the probability it is yellow? Write your answer in simplest form.

ANSWER: **2 out of 10 = $\frac{1}{5}$**

18. Word problems

Read each problem. Write the answer.

- 1 A jar contains 2 green and 6 yellow beads. One bead is drawn at random.
What is the probability of NOT getting a green bead? Write your answer in simplest form.

- 2 A bag contains 5 yellow and 7 green marbles. One marble is picked at random.
What is the probability of getting a yellow marble? Write your answer in simplest form.

- 3 A box contains 2 red and 6 yellow tickets. One ticket is drawn at random.
What is the probability of NOT getting a red ticket? Write your answer in simplest form.

- 4 A bag contains 4 blue and 2 red marbles. One marble is drawn at random.
What is the probability of NOT getting a blue marble? Write your answer in simplest form.

- 5 A bag contains 6 blue and 2 yellow marbles. One marble is picked at random.
What is the probability of getting a blue marble? Write your answer in simplest form.

- 6 A tin has 6 red buttons and 2 green buttons. One button is picked at random.
What is the probability that it is not red? Give your answer in simplest form.

Mean, Median and Mode

WORKED EXAMPLE

Range

10, 20, 26, 26, 18

16

19. Mean, median, mode and range

Find the statistic named beside each set of numbers.

- | | | | |
|--|---|--|---|
| 1 Mean
34, 8, 8, 42, 33
_____ | 2 Median
25, 7, 7, 15, 21
_____ | 3 Median
4, 44, 26, 17, 44
_____ | 4 Mode
17, 41, 22, 17, 18
_____ |
| 5 Mode
48, 36, 43, 10, 48
_____ | 6 Mode
2, 43, 19, 19, 37
_____ | 7 Mean
47, 2, 44, 30, 47
_____ | 8 Mean
15, 15, 3, 6, 26
_____ |
| 9 Mean
39, 43, 33, 39, 46
_____ | 10 Range
23, 20, 13, 39, 20
_____ | 11 Mode
42, 50, 20, 31, 42
_____ | 12 Mode
49, 49, 7, 8, 42
_____ |
| 13 Mode
27, 15, 37, 27, 29
_____ | 14 Mean
24, 25, 31, 25, 50
_____ | 15 Range
25, 25, 9, 8, 3
_____ | 16 Median
49, 46, 26, 3, 46
_____ |
| 17 Range
40, 47, 3, 17, 3
_____ | 18 Mean
33, 47, 47, 14, 49
_____ | | |

Answer Key (1 of 6)

Positive and Negative Numbers

Add and subtract integers

1. $-28 + 3 = -25$
2. $-36 + 37 = 1$
3. $-87 + 78 = -9$
4. $7 - 23 = -16$
5. $-66 + 38 = -28$
6. $-1 + 69 = 68$
7. $-22 + 29 = 7$
8. $-78 + 45 = -33$
9. $68 - 72 = -4$
10. $-4 + 45 = 41$
11. $-47 + 73 = 26$
12. $-8 + 34 = 26$
13. $-48 + 18 = -30$
14. $29 - 45 = -16$
15. $-31 + 20 = -11$
16. $-42 + 37 = -5$
17. $30 - 57 = -27$
18. $-17 + 19 = 2$
19. $-22 + 39 = 17$
20. $-55 + 61 = 6$
21. $-74 + 5 = -69$
22. $-84 + 92 = 8$
23. $-17 + 15 = -2$
24. $-63 + 49 = -14$
25. $-38 + 15 = -23$
26. $-1 + 28 = 27$
27. $-45 + 66 = 21$
28. $-17 + 35 = 18$
29. $-46 + 29 = -17$
30. $-100 + 64 = -36$
31. $-67 + 17 = -50$
32. $3 - 67 = -64$
33. $-59 + 34 = -25$
34. $-58 + 8 = -50$
35. $-80 + 63 = -17$
36. $-24 + 31 = 7$
37. $-34 + 13 = -21$
38. $3 - 52 = -49$
39. $-14 + 47 = 33$
40. $39 - 40 = -1$
41. $-34 + 3 = -31$
42. $-5 + 94 = 89$
43. $-26 + 11 = -15$
44. $16 - 25 = -9$
45. $-92 + 76 = -16$
46. $-42 + 23 = -19$

Positive and Negative Numbers (continued)

Add and subtract integers (continued)

47. $-18 + 14 = -4$
48. $21 - 48 = -27$
49. $20 - 22 = -2$
50. $-7 + 36 = 29$

Multiplying and Dividing Integers

Multiplying and dividing integers

1. $-18 \div 2 = -9$
2. $-18 \div 3 = -6$
3. $-40 \div -4 = 10$
4. $-72 \div 6 = -12$
5. $-4 \times 5 = -20$
6. $-72 \div 12 = -6$
7. $-60 \div -10 = 6$
8. $-11 \times -3 = 33$
9. $-4 \times 7 = -28$
10. $2 \times -6 = -12$
11. $-99 \div -9 = 11$
12. $-2 \times 6 = -12$
13. $-3 \times 7 = -21$
14. $-7 \times 10 = -70$
15. $3 \times -4 = -12$
16. $108 \div -12 = -9$
17. $-36 \div 3 = -12$
18. $-88 \div -8 = 11$
19. $-49 \div -7 = 7$
20. $-60 \div 6 = -10$
21. $-30 \div 10 = -3$
22. $7 \times -8 = -56$
23. $-6 \div 3 = -2$
24. $8 \times -8 = -64$

Ratio and Proportion

Unit rates

1. \$15 for 5 = \$3 each
2. \$48 for 6 = \$8 each
3. \$32 for 8 = \$4 each
4. \$42 for 6 = \$7 each
5. \$48 for 4 = \$12 each
6. \$40 for 4 = \$10 each
7. \$27 for 3 = \$9 each
8. \$6 for 2 = \$3 each
9. \$80 for 8 = \$10 each
10. \$54 for 6 = \$9 each
11. \$48 for 8 = \$6 each
12. \$16 for 2 = \$8 each

Answer Key (2 of 6)

Ratio and Proportion (continued)

Unit rates (continued)

13. \$45 for 5 = \$9 each
14. \$24 for 6 = \$4 each
15. \$14 for 2 = \$7 each
16. \$64 for 8 = \$8 each
17. \$12 for 2 = \$6 each
18. \$40 for 5 = \$8 each
19. \$22 for 2 = \$11 each
20. \$33 for 3 = \$11 each
21. \$30 for 3 = \$10 each
22. \$20 for 2 = \$10 each
23. \$12 for 3 = \$4 each
24. \$28 for 4 = \$7 each
25. \$9 for 3 = \$3 each
26. \$12 for 4 = \$3 each
27. \$56 for 7 = \$8 each
28. \$15 for 3 = \$5 each
29. \$60 for 6 = \$10 each
30. \$35 for 7 = \$5 each
31. \$44 for 4 = \$11 each
32. \$42 for 7 = \$6 each
33. \$14 for 7 = \$2 each
34. \$16 for 8 = \$2 each

Proportions

35. $1 : 2 = 8 : 16$
36. $5 : 6 = 30 : 36$
37. $1 : 2 = 2 : 4$
38. $5 : 8 = 10 : 16$
39. $5 : 8 = 40 : 64$
40. $1 : 4 = 4 : 16$
41. $3 : 8 = 18 : 48$
42. $3 : 4 = 6 : 8$
43. $3 : 7 = 21 : 49$
44. $2 : 3 = 16 : 24$
45. $3 : 4 = 18 : 24$
46. $3 : 8 = 9 : 24$
47. $1 : 6 = 2 : 12$
48. $3 : 7 = 9 : 21$
49. $5 : 6 = 15 : 18$
50. $1 : 6 = 3 : 18$
51. $3 : 7 = 15 : 35$
52. $2 : 3 = 12 : 18$
53. $5 : 6 = 25 : 30$
54. $5 : 6 = 20 : 24$
55. $3 : 4 = 12 : 16$
56. $3 : 5 = 15 : 25$
57. $3 : 5 = 18 : 30$

Ratio and Proportion (continued)

Proportions (continued)

58. $1 : 3 = 7 : 21$
59. $1 : 3 = 4 : 12$
60. $3 : 7 = 24 : 56$
61. $1 : 6 = 8 : 48$
62. $1 : 3 = 5 : 15$
63. $2 : 3 = 10 : 15$
64. $3 : 8 = 6 : 16$
65. $2 : 5 = 16 : 40$
66. $3 : 8 = 21 : 56$
67. $2 : 3 = 6 : 9$
68. $3 : 7 = 12 : 28$

Percent Problems

Percent

1. 75% more than 64 = 112
2. 20% more than 65 = 78
3. 20% more than 25 = 30
4. 50% more than 200 = 300
5. 50% more than 74 = 111
6. 80% more than 145 = 261
7. 75% more than 180 = 315
8. 50% more than 36 = 54
9. 40% more than 85 = 119
10. 50% more than 158 = 237
11. 50% more than 6 = 9
12. 10% more than 100 = 110
13. 25% more than 124 = 155
14. 10% more than 40 = 44
15. 25% more than 84 = 105
16. 50% more than 34 = 51
17. 75% more than 192 = 336
18. 25% more than 92 = 115
19. 20% more than 145 = 174
20. 40% more than 190 = 266
21. 40% more than 95 = 133
22. 10% more than 130 = 143
23. 25% more than 60 = 75
24. 80% more than 140 = 252
25. 75% more than 16 = 28
26. 10% more than 10 = 11
27. 20% more than 130 = 156
28. 20% more than 10 = 12
29. 50% more than 54 = 81
30. 60% more than 105 = 168
31. 60% more than 110 = 176
32. 80% more than 25 = 45

Answer Key (3 of 6)

Percent Problems (continued)

Percent (continued)

33. 80% more than 175 = 315
34. 80% more than 35 = 63
35. 20% more than 110 = 132
36. 20% more than 160 = 192
37. 40% more than 170 = 238
38. 75% more than 168 = 294
39. 40% more than 110 = 154
40. 60% more than 95 = 152
41. 75% more than 148 = 259
42. 50% more than 2 = 3
43. 20% more than 85 = 102
44. 10% more than 190 = 209

Decimal Operations

Multiply and divide decimals

1. $5.6 \div 4 = 1.4$
2. $29.76 \div 3 = 9.92$
3. $3.0 \times 5 = 15.0$
4. $7.8 \div 2 = 3.9$
5. $5.26 \times 9 = 47.34$
6. $45.0 \div 10 = 4.5$
7. $34.10 \div 5 = 6.82$
8. $0.43 \times 4 = 1.72$
9. $37.2 \div 12 = 3.1$
10. $10.76 \div 2 = 5.38$
11. $37.8 \div 9 = 4.2$
12. $9.51 \times 2 = 19.02$
13. $11.6 \times 11 = 127.6$
14. $18.9 \div 7 = 2.7$
15. $27.5 \div 11 = 2.5$
16. $93.06 \div 9 = 10.34$
17. $8.84 \times 0.78 = 6.8952$
18. $50.4 \div 12 = 4.2$
19. $3.8 \times 2 = 7.6$
20. $4.5 \times 1.6 = 7.20$
21. $86.9 \div 11 = 7.9$
22. $5.70 \times 2.89 = 16.4730$
23. $2.9 \times 2.9 = 8.41$
24. $1.2 \div 4 = 0.3$
25. $64.8 \div 8 = 8.1$
26. $8.3 \times 1.8 = 14.94$
27. $33.48 \div 6 = 5.58$
28. $49.5 \div 5 = 9.9$
29. $9.9 \div 3 = 3.3$
30. $8.9 \times 4 = 35.6$
31. $0.95 \times 4.74 = 4.5030$

Decimal Operations (continued)

Multiply and divide decimals (continued)

32. $46.8 \div 4 = 11.7$
33. $0.81 \times 8 = 6.48$
34. $55.2 \div 6 = 9.2$
35. $0.6 \div 6 = 0.1$
36. $8.1 \times 3.7 = 29.97$
37. $0.93 \times 11 = 10.23$
38. $59.4 \div 11 = 5.4$
39. $82.4 \div 8 = 10.3$
40. $3.4 \times 1.5 = 5.10$
41. $2.04 \times 0.15 = 0.3060$
42. $31.5 \div 7 = 4.5$
43. $10.2 \times 12 = 122.4$
44. $14.5 \div 5 = 2.9$
45. $8.0 \times 0.17 = 1.360$
46. $14.80 \div 10 = 1.48$
47. $27.20 \div 5 = 5.44$
48. $36.0 \div 12 = 3.0$
49. $6.69 \times 8.6 = 57.534$
50. $32.9 \div 7 = 4.7$

Fraction Operations

Multiplying and dividing fractions

1. $6/7 \times 3/6 = 3/7$
2. $5/8 \div 1/8 = 5$
3. $7/8 \times 1/6 = 7/48$
4. $3/6 \times 1/4 = 1/8$
5. $5/6 \div 1/7 = 35/6$
6. $6/8 \times 4/6 = 1/2$
7. $4/8 \times 3/5 = 3/10$
8. $1/5 \div 3/8 = 8/15$
9. $1/4 \times 4/8 = 1/8$
10. $5/6 \div 1/3 = 5/2$
11. $1/2 \times 2/4 = 1/4$
12. $1/4 \times 1/8 = 1/32$
13. $2/4 \div 5/7 = 7/10$
14. $3/5 \times 4/7 = 12/35$
15. $2/3 \div 6/7 = 7/9$
16. $4/6 \times 3/8 = 1/4$
17. $3/6 \times 4/8 = 1/4$
18. $1/7 \div 1/6 = 6/7$
19. $4/6 \times 3/6 = 1/3$
20. $1/8 \div 5/8 = 1/5$
21. $7/8 \times 3/5 = 21/40$
22. $2/5 \times 2/8 = 1/10$
23. $1/3 \div 4/8 = 2/3$
24. $3/6 \times 1/5 = 1/10$

Answer Key (4 of 6)

Fraction Operations (continued)

Multiplying and dividing fractions (continued)

25. $1/8 \div 3/5 = 5/24$
26. $1/7 \times 1/6 = 1/42$
27. $3/8 \div 6/7 = 7/16$
28. $5/6 \times 3/5 = 1/2$
29. $5/6 \times 1/8 = 5/48$
30. $2/5 \div 3/8 = 16/15$
31. $3/8 \times 3/5 = 9/40$
32. $7/8 \div 3/7 = 49/24$
33. $2/6 \times 5/7 = 5/21$
34. $1/5 \times 4/8 = 1/10$
35. $3/6 \div 1/2 = 1$
36. $1/4 \times 4/7 = 1/7$
37. $2/8 \div 1/5 = 5/4$
38. $2/6 \times 1/8 = 1/24$
39. $2/7 \div 1/2 = 4/7$
40. $1/8 \times 2/6 = 1/24$
41. $1/4 \times 1/6 = 1/24$
42. $3/5 \div 4/6 = 9/10$
43. $4/5 \times 4/8 = 2/5$
44. $3/7 \div 2/5 = 15/14$

Solving Equations

Solving equations

1. $5x + 13 = 18 \rightarrow x = 1$
2. $5x - 20 = 5 \rightarrow x = 5$
3. $9x - 10 = 8 \rightarrow x = 2$
4. $5x + 4 = 19 \rightarrow x = 3$
5. $3x + 5 = 32 \rightarrow x = 9$
6. $5x + 23 = 48 \rightarrow x = 5$
7. $5x - 18 = 2 \rightarrow x = 4$
8. $5x + 31 = 46 \rightarrow x = 3$
9. $4x + 20 = 40 \rightarrow x = 5$
10. $2x + 17 = 47 \rightarrow x = 15$
11. $3x - 9 = 3 \rightarrow x = 4$
12. $5x + 15 = 50 \rightarrow x = 7$
13. $5x + 16 = 36 \rightarrow x = 4$
14. $3x + 1 = 34 \rightarrow x = 11$
15. $6x + 14 = 20 \rightarrow x = 1$
16. $7x + 6 = 41 \rightarrow x = 5$
17. $4x + 5 = 9 \rightarrow x = 1$
18. $2x - 25 = 23 \rightarrow x = 24$
19. $9x + 1 = 10 \rightarrow x = 1$
20. $6x - 37 = 5 \rightarrow x = 7$
21. $4x - 9 = 39 \rightarrow x = 12$
22. $12x + 2 = 50 \rightarrow x = 4$
23. $3x + 3 = 18 \rightarrow x = 5$

Solving Equations (continued)

Solving equations (continued)

24. $4x + 21 = 29 \rightarrow x = 2$
25. $3x + 7 = 37 \rightarrow x = 10$
26. $3x + 9 = 27 \rightarrow x = 6$
27. $3x + 19 = 28 \rightarrow x = 3$
28. $10x - 14 = 6 \rightarrow x = 2$
29. $3x - 24 = 9 \rightarrow x = 11$
30. $4x - 7 = 21 \rightarrow x = 7$
31. $2x + 19 = 21 \rightarrow x = 1$
32. $2x - 17 = 17 \rightarrow x = 17$
33. $2x + 5 = 19 \rightarrow x = 7$
34. $7x - 7 = 7 \rightarrow x = 2$
35. $4x + 8 = 16 \rightarrow x = 2$
36. $5x - 9 = 26 \rightarrow x = 7$
37. $2x - 33 = 11 \rightarrow x = 22$
38. $7x + 12 = 40 \rightarrow x = 4$
39. $7x - 5 = 30 \rightarrow x = 5$
40. $4x + 6 = 46 \rightarrow x = 10$
41. $6x - 6 = 6 \rightarrow x = 2$
42. $10x + 3 = 23 \rightarrow x = 2$
43. $6x + 1 = 49 \rightarrow x = 8$
44. $5x - 2 = 43 \rightarrow x = 9$
45. $11x - 14 = 8 \rightarrow x = 2$
46. $6x - 24 = 12 \rightarrow x = 6$
47. $2x + 8 = 42 \rightarrow x = 17$
48. $11x - 27 = 6 \rightarrow x = 3$
49. $3x + 7 = 31 \rightarrow x = 8$
50. $11x - 42 = 2 \rightarrow x = 4$

Inequalities

Inequalities

1. $7x + 11 < 4 \rightarrow x < -1$
2. $-5x + 2 > -23 \rightarrow x < 5$
3. $6x + 2 > -22 \rightarrow x > -4$
4. $-8x + 1 \geq 97 \rightarrow x \leq -12$
5. $3x + 6 \leq 24 \rightarrow x \leq 6$
6. $-8x + 6 < -34 \rightarrow x > 5$
7. $6x + 1 \leq -23 \rightarrow x \leq -4$
8. $-7x + 10 \leq -53 \rightarrow x \geq 9$
9. $7x + 3 < -74 \rightarrow x < -11$
10. $2x + 9 > 77 \rightarrow x > 34$
11. $8x + 6 < 54 \rightarrow x < 6$
12. $-3x + 5 > -10 \rightarrow x < 5$
13. $-8x + 8 \geq -80 \rightarrow x \leq 11$
14. $9x + 8 > 35 \rightarrow x > 3$
15. $2x + 1 \geq -69 \rightarrow x \geq -35$
16. $8x + 5 < -19 \rightarrow x < -3$

Answer Key (5 of 6)

Inequalities (continued)

Inequalities (continued)

17. $-3x + 2 > -73 \rightarrow x < 25$
18. $4x + 4 \geq -40 \rightarrow x \geq -11$

Area of Composite Shapes

Area of composite figures

1. 14×11 less 5×6 : 124 cm^2
2. 14×16 less 10×7 : 154 cm^2
3. 18×5 less 11×3 : 57 cm^2
4. 15×20 less 8×7 : 244 cm^2
5. 5×4 less 3×2 : 14 cm^2
6. 12×18 less 3×13 : 177 cm^2
7. 18×8 less 7×5 : 109 cm^2
8. 20×14 less 17×7 : 161 cm^2
9. 16×13 less 12×8 : 112 cm^2
10. 7×4 less 2×2 : 24 cm^2
11. 16×19 less 6×5 : 274 cm^2

Area of a Circle

Area of a circle

1. $r = 2$: 12.56 cm^2
2. $r = 7$: 153.86 cm^2
3. $r = 6$: 113.04 cm^2
4. $r = 13$: 530.66 cm^2
5. $d = 12$: 113.04 cm^2
6. $d = 18$: 254.34 cm^2
7. $d = 10$: 78.5 cm^2
8. $r = 20$: 1256 cm^2
9. $d = 16$: 200.96 cm^2
10. $r = 3$: 28.26 cm^2
11. $r = 16$: 803.84 cm^2

Circumference

Circumference of a circle

1. $r = 5$: 31.4 cm
2. $d = 14$: 43.96 cm
3. $r = 2$: 12.56 cm
4. $r = 17$: 106.76 cm
5. $d = 13$: 40.82 cm
6. $d = 4$: 12.56 cm
7. $r = 18$: 113.04 cm
8. $d = 9$: 28.26 cm
9. $r = 11$: 69.08 cm
10. $d = 18$: 56.52 cm
11. $r = 4$: 25.12 cm

Angle Pairs

Missing angles in a pair

1. supplementary, 83° : 97°
2. vertical, 129° : 129°
3. supplementary, 97° : 83°
4. vertical, 116° : 116°
5. supplementary, 75° : 105°
6. vertical, 122° : 122°
7. supplementary, 64° : 116°
8. vertical, 139° : 139°
9. complementary, 52° : 38°
10. vertical, 112° : 112°
11. supplementary, 99° : 81°

Angles in a Triangle

The third angle of a triangle

1. $55^\circ + 75^\circ = 130^\circ$: 50°
2. $25^\circ + 60^\circ = 85^\circ$: 95°
3. $45^\circ + 105^\circ = 150^\circ$: 30°
4. $75^\circ + 80^\circ = 155^\circ$: 25°
5. $30^\circ + 50^\circ = 80^\circ$: 100°
6. $30^\circ + 75^\circ = 105^\circ$: 75°
7. $30^\circ + 80^\circ = 110^\circ$: 70°
8. $55^\circ + 60^\circ = 115^\circ$: 65°
9. $50^\circ + 60^\circ = 110^\circ$: 70°
10. $25^\circ + 50^\circ = 75^\circ$: 105°
11. $65^\circ + 65^\circ = 130^\circ$: 50°

Volume of Cylinders

Volume of a cylinder

1. $d = 4$, $h = 5$: 62.8 cm^3
2. $d = 14$, $h = 8$: 1230.88 cm^3
3. $r = 9$, $h = 16$: 4069.44 cm^3
4. $r = 3$, $h = 3$: 84.78 cm^3
5. $r = 7$, $h = 6$: 923.16 cm^3
6. $r = 9$, $h = 9$: 2289.06 cm^3
7. $r = 3$, $h = 8$: 226.08 cm^3

Surface Area

Surface area of a box

1. $3 \times 10 \times 10 \rightarrow 2(30 + 30 + 100)$: 320 cm^2
2. $4 \times 11 \times 15 \rightarrow 2(44 + 60 + 165)$: 538 cm^2
3. $12 \times 13 \times 15 \rightarrow 2(156 + 180 + 195)$: 1062 cm^2
4. $3 \times 4 \times 6 \rightarrow 2(12 + 18 + 24)$: 108 cm^2
5. $9 \times 9 \times 10 \rightarrow 2(81 + 90 + 90)$: 522 cm^2
6. $11 \times 11 \times 12 \rightarrow 2(121 + 132 + 132)$: 770 cm^2
7. $4 \times 12 \times 13 \rightarrow 2(48 + 52 + 156)$: 512 cm^2
8. $8 \times 10 \times 15 \rightarrow 2(80 + 120 + 150)$: 700 cm^2

Answer Key (6 of 6)

Probability

Probability of one event

1. 3 red, 7 blue, 2 green $\rightarrow P(\text{red}) = 1/4$
2. 2 red, 8 blue, 2 green $\rightarrow P(\text{not blue}) = 1/3$
3. 2 red, 4 blue, 6 green $\rightarrow P(\text{not red}) = 5/6$
4. 5 red, 3 blue, 4 green $\rightarrow P(\text{green}) = 1/3$
5. 5 red, 5 blue, 2 green $\rightarrow P(\text{red}) = 5/12$
6. 5 red, 3 blue, 4 green $\rightarrow P(\text{not blue}) = 3/4$
7. 3 red, 9 blue $\rightarrow P(\text{blue}) = 3/4$
8. 6 red, 3 blue, 3 green $\rightarrow P(\text{not blue}) = 3/4$
9. 3 red, 7 blue, 2 green $\rightarrow P(\text{not blue}) = 5/12$
10. 8 red, 2 blue, 2 green $\rightarrow P(\text{red}) = 2/3$
11. 5 red, 4 blue, 3 green $\rightarrow P(\text{blue}) = 1/3$
12. 2 red, 6 blue, 4 green $\rightarrow P(\text{not red}) = 5/6$
13. 4 red, 4 blue, 4 green $\rightarrow P(\text{green}) = 1/3$
14. 7 red, 3 blue, 2 green $\rightarrow P(\text{not blue}) = 3/4$
15. 5 red, 2 blue, 5 green $\rightarrow P(\text{red}) = 5/12$
16. 2 red, 7 blue, 3 green $\rightarrow P(\text{not red}) = 5/6$
17. 7 red, 2 blue, 3 green $\rightarrow P(\text{red}) = 7/12$
18. 7 red, 3 blue, 2 green $\rightarrow P(\text{not green}) = 5/6$
19. 3 red, 3 blue, 6 green $\rightarrow P(\text{not red}) = 3/4$
20. 4 red, 3 blue, 5 green $\rightarrow P(\text{red}) = 1/3$

Probability Word Problems

Word problems

1. not green: 6 out of 8 = $3/4$
2. 5 out of 12 = $5/12$
3. not red: 6 out of 8 = $3/4$
4. not blue: 2 out of 6 = $1/3$
5. 6 out of 8 = $3/4$
6. not red: 2 out of 8 = $1/4$

Mean, Median and Mode

Mean, median, mode and range

1. Mean of 34, 8, 8, 42, 33 = 25
2. Median of 25, 7, 7, 15, 21 = 15
3. Median of 4, 44, 26, 17, 44 = 26
4. Mode of 17, 41, 22, 17, 18 = 17
5. Mode of 48, 36, 43, 10, 48 = 48
6. Mode of 2, 43, 19, 19, 37 = 19
7. Mean of 47, 2, 44, 30, 47 = 34
8. Mean of 15, 15, 3, 6, 26 = 13
9. Mean of 39, 43, 33, 39, 46 = 40
10. Range of 23, 20, 13, 39, 20 = 26
11. Mode of 42, 50, 20, 31, 42 = 42
12. Mode of 49, 49, 7, 8, 42 = 49
13. Mode of 27, 15, 37, 27, 29 = 27

Mean, Median and Mode (continued)

Mean, median, mode and range (continued)

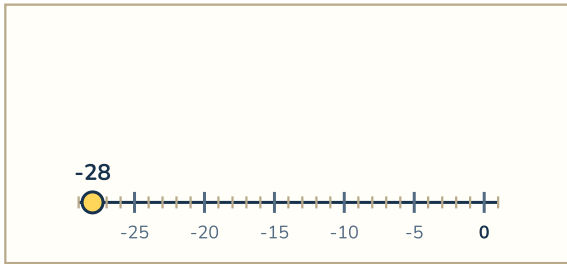
14. Mean of 24, 25, 31, 25, 50 = 31
15. Range of 25, 25, 9, 8, 3 = 22
16. Median of 49, 46, 26, 3, 46 = 46
17. Range of 40, 47, 3, 17, 3 = 44
18. Mean of 33, 47, 47, 14, 49 = 38

Solutions (1 of 15)

Positive and Negative Numbers

Add and subtract integers

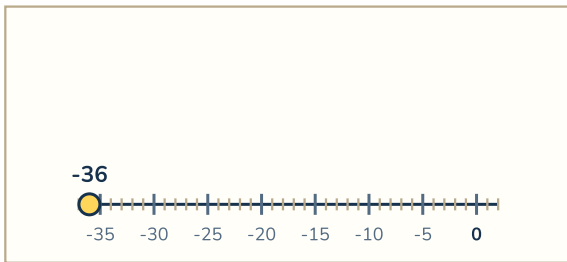
1. $-28 + 3 = \underline{\hspace{2cm}}$



Put a counter on -28. Everything else is which way it slides and how far.

Adding a positive moves right, the way it always has. So slide 3 to the right, from -28 to -25. $(-28) + 3 = -25$.

2. $-36 + 37 = \underline{\hspace{2cm}}$



Put a counter on -36. Everything else is which way it slides and how far.

Adding a positive moves right, the way it always has. So slide 37 to the right, from -36 to 1. $(-36) + 37 = 1$.

Multiplying and Dividing Integers

Multiplying and dividing integers

1. $-18 \div 2 = \underline{\hspace{2cm}}$

$$(-18) \div 2 = ?$$
$$18 \div 2 = 9$$

signs: $(-18) \quad 2 \rightarrow$

minus

$$(-18) \div 2 = (-9)$$

Two easy jobs, kept apart: how BIG the answer is, then which side of zero it is on. Do the size first, with the minus signs set aside.

Signs off: $18 \div 2 = 9$. Ordinary times-tables — the negatives play no part in the size.

Now the sign. One number is negative and one is positive — a single minus, with nothing to cancel it. Different signs give a MINUS.

Size 9, sign minus — so $(-18) \div 2 = (-9)$.

Solutions (2 of 15)

Multiplying and Dividing Integers (continued)

Multiplying and dividing integers (continued)

2. $-18 \div 3 = \underline{\hspace{1cm}}$

$$(-18) \div 3 = ?$$

$$18 \div 3 = 6$$

signs: $(-18) \quad 3 \rightarrow$

minus

$$(-18) \div 3 = (-6)$$

Two easy jobs, kept apart: how BIG the answer is, then which side of zero it is on. Do the size first, with the minus signs set aside.

Signs off: $18 \div 3 = 6$. Ordinary times-tables — the negatives play no part in the size.

Now the sign. One number is negative and one is positive — a single minus, with nothing to cancel it. Different signs give a MINUS.

Size 6, sign minus — so $(-18) \div 3 = (-6)$.

Ratio and Proportion

Unit rates

1. $\$15 \text{ for } 5 = \underline{\hspace{1cm}} \text{ each}$

$$\$15 \text{ for } 5$$

$$\$15 \div 5 = \$3$$

5 for \$15. To compare prices at all you have to get down to ONE — that is what a unit rate is for.

Sharing the price between them: $\$15 \div 5 = \3 each.

2. $\$48 \text{ for } 6 = \underline{\hspace{1cm}} \text{ each}$

$$\$48 \text{ for } 6$$

$$\$48 \div 6 = \$8$$

6 for \$48. To compare prices at all you have to get down to ONE — that is what a unit rate is for.

Sharing the price between them: $\$48 \div 6 = \8 each.

Percent Problems

Percent

1. $75\% \text{ more than } 64 = \underline{\hspace{1cm}}$

$$1\% \text{ of } 64 = 0.64$$

$$0.64 \times 75 = 48$$

$$64 + 48 = 112$$

Find one percent first — that is one hundredth of 64, which is 0.64.

75% is 75 of those, so multiply: $0.64 \times 75 = 48$.

"More than" means the 48 goes ON TOP of the 64, not instead of it: $64 + 48 = 112$.

Solutions (3 of 15)

Percent Problems (continued)

Percent (continued)

2. 20% more than 65 = ____

$$1\% \text{ of } 65 = 0.65$$

$$0.65 \times 20 = 13$$

$$65 + 13 = 78$$

Find one percent first — that is one hundredth of 65, which is 0.65.

20% is 20 of those, so multiply: $0.65 \times 20 = 13$.

"More than" means the 13 goes ON TOP of the 65, not instead of it: $65 + 13 = 78$.

Decimal Operations

Multiply and divide decimals

1. $5.6 \div 4 =$ ____

$$5.6 \div 4$$

$$5.6 \div 4 = 1.4$$

$$1.4 \times 4 = 5.6$$

The number you are dividing by is already whole, so there is nothing to move: divide as usual and the point in the answer comes straight down.

Now divide: $5.6 \div 4 = 1.4$.

Check it the other way round: 1.4×4 should give 5.6 back. A point in the wrong place fails this instantly — 5.6 and a tenth of it are not close.

2. $29.76 \div 3 =$ ____

$$29.76 \div 3$$

$$29.76 \div 3 = 9.92$$

$$9.92 \times 3 = 29.76$$

The number you are dividing by is already whole, so there is nothing to move: divide as usual and the point in the answer comes straight down.

Now divide: $29.76 \div 3 = 9.92$.

Check it the other way round: 9.92×3 should give 29.76 back. A point in the wrong place fails this instantly — 29.76 and a tenth of it are not close.

Solutions (4 of 15)

Fraction Operations

Multiplying and dividing fractions

1. $\frac{6}{7} \times \frac{3}{6} = \text{—}$

$$\begin{aligned}\frac{6}{7} \times \frac{3}{6} \\ \text{top: } 6 \times 3 &= 18 \\ \frac{6}{7} \times \frac{3}{6} &= \frac{18}{42} \\ \frac{18}{42} &= \frac{3}{7}\end{aligned}$$

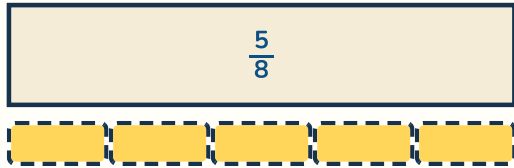
Multiplying, not adding — so no common denominator, and nothing has to be cut into matching pieces first. Tops with tops, bottoms with bottoms.

Multiply the two top numbers: $6 \times 3 = 18$.

Multiply the two bottom numbers: $7 \times 6 = 42$.

18/42 simplifies to 3/7.

2. $\frac{5}{8} \div \frac{1}{8} = \text{—}$



each piece is $\frac{1}{8}$

$$\begin{aligned}\frac{1}{8} &\rightarrow \frac{8}{1} \\ \frac{5}{8} \div \frac{1}{8} &= \frac{5}{1} \\ \frac{5}{8} \times \frac{8}{1} &= \frac{5}{1} \\ \frac{40}{8} &= \frac{5}{1}\end{aligned}$$

$\frac{5}{8} \div \frac{1}{8}$ is asking a question: how many $\frac{1}{8}$ s fit inside $\frac{5}{8}$?

Lay $\frac{1}{8}$ against it and see how many times it goes.

5 whole pieces fits — so $\frac{5}{8} \div \frac{1}{8} = \frac{5}{1}$.

Now try multiplying by $\frac{8}{1}$ — $\frac{1}{8}$ turned over. It lands on the same number.

That is all turning it over does — the two questions are the same question, so either way of writing it will do. $\frac{5}{8} \div \frac{1}{8} = \frac{5}{1}$.

Worked out in full: 5×8 over 8×1 is $\frac{40}{8}$, which simplifies to $\frac{5}{1}$.

Solutions (5 of 15)

Solving Equations

Solving equations

1. $5x + 13 = 18$

$$5x + 13 = 18$$

$$5x = 5$$

$$x = 1$$

Two things were done to x : multiplied by 5, then 13 added. Undo them in the REVERSE order — whatever happened last comes off first.

The 13 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. $18 - 13 = 5$.

That leaves $5x$, which means 5 lots of x . Divide both sides by 5: $5 \div 5 = 1$.

Check by putting it back: $5(1) + 13 = 18$. It holds, so $x = 1$.

2. $5x - 20 = 5$

$$5x - 20 = 5$$

$$5x = 25$$

$$x = 5$$

Two things were done to x : multiplied by 5, then 20 taken away. Undo them in the REVERSE order — whatever happened last comes off first.

The 20 went on last, so it comes off first — and off BOTH sides, or the two halves stop being equal. $5 + 20 = 25$.

That leaves $5x$, which means 5 lots of x . Divide both sides by 5: $25 \div 5 = 5$.

Check by putting it back: $5(5) - 20 = 5$. It holds, so $x = 5$.

Solutions (6 of 15)

Inequalities

Inequalities

1. $7x + 11 < 4$ x -1

$$x < -1$$

An inequality comes apart exactly like an equation — the same moves, done to both sides. There is one extra rule and it arrives at the end, so start by ignoring the sign and solving for x .

11 was added last, so it comes off first — off BOTH sides: $4 - 11 = -7$.

Now divide both sides by 7: $-7 \div 7 = -1$.

Nothing was divided by a negative here, so the sign has not moved: it is still $<$. That is the one thing to check on every one of these before writing the answer down.

So $x < -1$. That is a whole RANGE of numbers rather than one, which is what makes this different from an equation — and why the sign is half the answer.

2. $-5x + 2 > -23$ x 5

$$x < 5$$

An inequality comes apart exactly like an equation — the same moves, done to both sides. There is one extra rule and it arrives at the end, so start by ignoring the sign and solving for x .

2 was added last, so it comes off first — off BOTH sides: $-23 - 2 = -25$.

Now divide both sides by -5 : $-25 \div -5 = 5$.

Here is the extra rule, and it is the only one: dividing both sides by a NEGATIVE turns the sign round, so $>$ becomes $<$. Do not take that on trust — put a number from the answer back into the question and see which way it has to face.

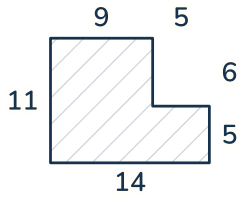
So $x < 5$. That is a whole RANGE of numbers rather than one, which is what makes this different from an equation — and why the sign is half the answer.

Solutions (7 of 15)

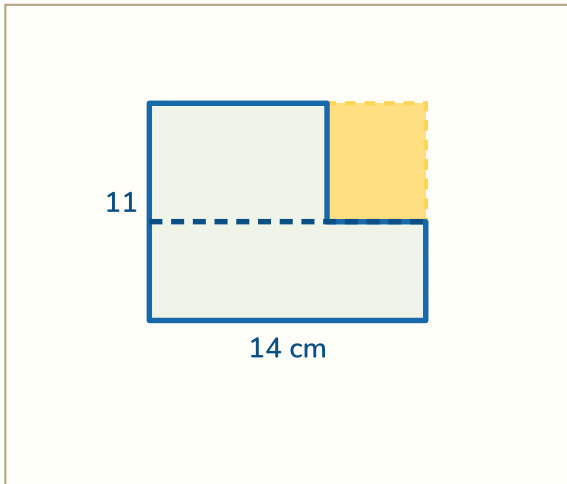
Area of Composite Shapes

Area of composite figures

1.



_____ cm²



First way: pretend the bite was never taken. The whole rectangle would be $14 \times 11 = 154$.

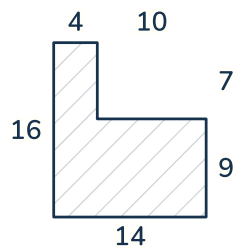
Then take the bite off. It is $5 \times 6 = 30$, so the L is $154 - 30 = 124$ square cm.

Second way, and it works on any of these: cut the L into two rectangles.

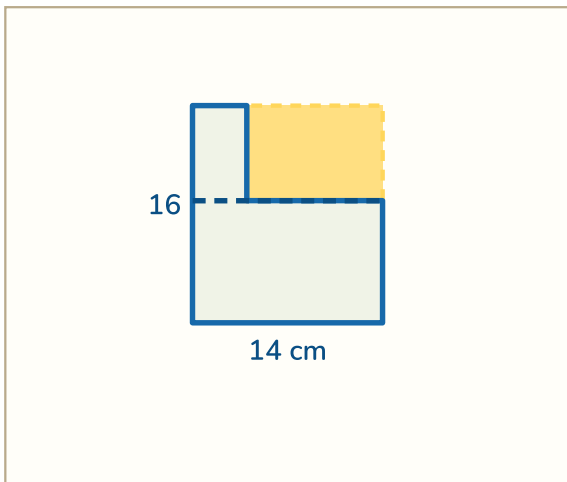
The bottom strip is $14 \times 5 = 70$, and the piece standing on it is $9 \times 6 = 54$.

$70 + 54 = 124$ square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

2.



_____ cm²



First way: pretend the bite was never taken. The whole rectangle would be $14 \times 16 = 224$.

Then take the bite off. It is $10 \times 7 = 70$, so the L is $224 - 70 = 154$ square cm.

Second way, and it works on any of these: cut the L into two rectangles.

The bottom strip is $14 \times 9 = 126$, and the piece standing on it is $4 \times 7 = 28$.

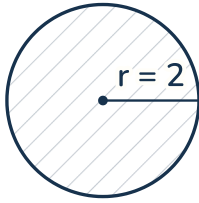
$126 + 28 = 154$ square cm — the same answer as the first way. Two methods that agree is how you know the answer is right.

Solutions (8 of 15)

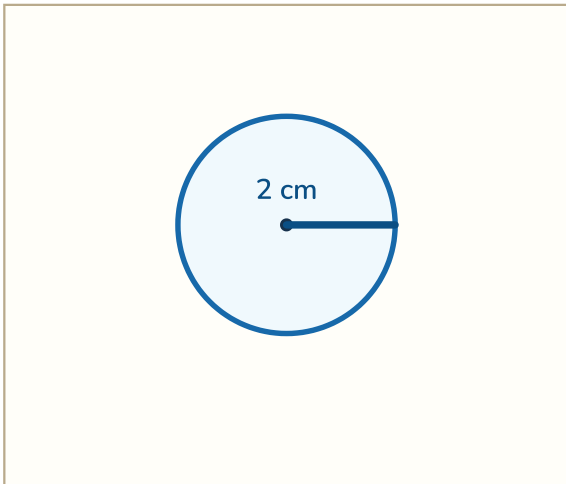
Area of a Circle

Area of a circle

1.



_____ cm²

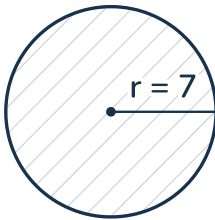


The 2 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

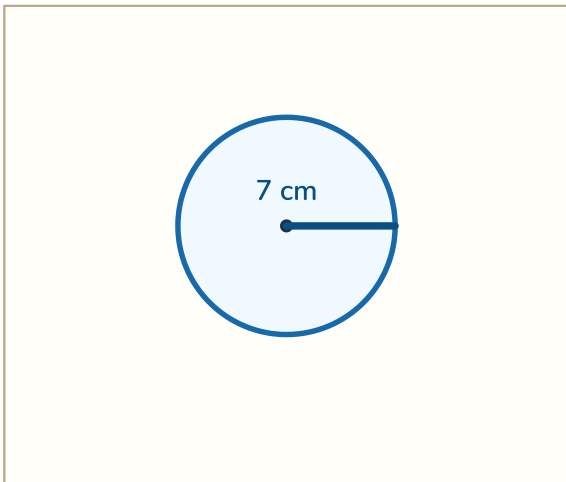
Area is $\pi \times r \times r$. Square the RADIUS first — only the r is squared, not the π with it: $2 \times 2 = 4$.

Then multiply by π : $4 \times 3.14 = 12.56$ square cm.

2.



_____ cm²



The 7 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

Area is $\pi \times r \times r$. Square the RADIUS first — only the r is squared, not the π with it: $7 \times 7 = 49$.

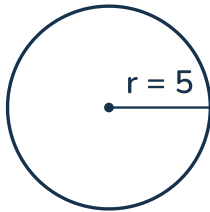
Then multiply by π : $49 \times 3.14 = 153.86$ square cm.

Solutions (9 of 15)

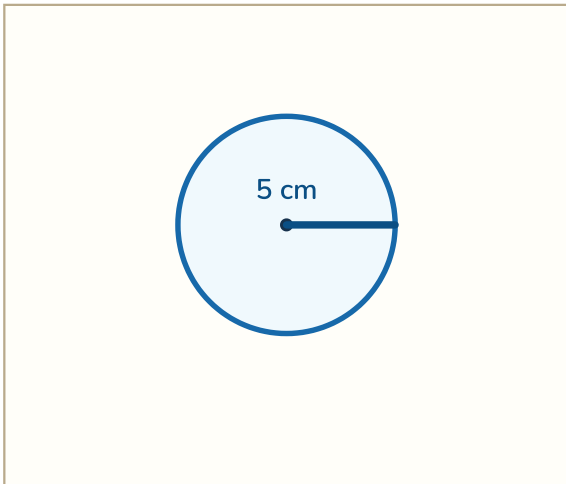
Circumference

Circumference of a circle

1.



_____ cm

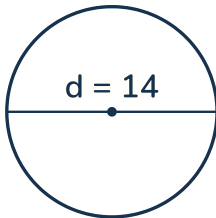


The 5 cm marked here runs from the center to the edge — that is the radius, which is what both formulas want.

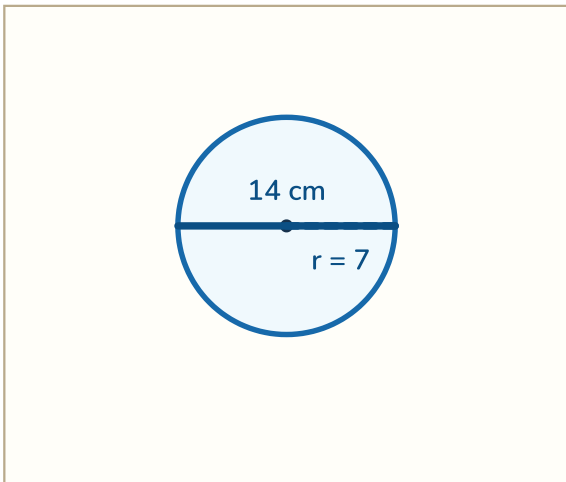
Circumference is $\pi \times$ the whole way across, and the whole way across is two radiuses: $2 \times 5 = 10$.

Then multiply by π : $10 \times 3.14 = 31.4\text{ cm}$. Slightly more than three times across — which is what π has always been.

2.



_____ cm



The 14 cm marked here goes right ACROSS the circle — it is the diameter, the whole way across, which is exactly what a circumference needs.

Circumference is $\pi \times$ the whole way across — that is the diameter, 14.

Then multiply by π : $14 \times 3.14 = 43.96\text{ cm}$. Slightly more than three times across — which is what π has always been.

Solutions (10 of 15)

Angle Pairs

Missing angles in a pair

1.



— degrees

$$83^\circ + x = 180^\circ$$

$$180 - 83 = 97^\circ$$

$$83^\circ + 97^\circ = 180^\circ$$

from the picture, not the numbers

lines crossing:

$x = \text{the angle opposite}$

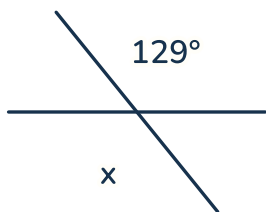
The two angles sit on a STRAIGHT LINE. A straight line is a half turn, which is 180 — not 90, and the picture is the only thing that tells you which.

So the two must add to 180: $x = 180 - 83 = 97^\circ$.

If it had been the other kind you would have taken it from 90 instead and been 90° out — which is why the picture is read first.

One more shape to know: where two straight lines CROSS, the two angles facing each other are equal — nothing is taken away at all. Subtracting there would be wrong.

2.



— degrees

$$\begin{array}{l} 129^\circ \text{ and } x \\ \text{opposite} = \text{equal} \\ 129^\circ \rightarrow 129^\circ \end{array}$$

Two straight lines crossing. This is the pair that is NOT a subtraction — nothing adds to 90 or 180 here, so reaching for either is the mistake.

Angles opposite each other at a crossing are EQUAL. Each one is what is left when the same straight line is taken away from the same straight line, so they cannot differ.

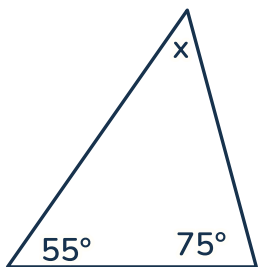
So x is 129° — the same as the one across from it, not 180 minus it.

Solutions (11 of 15)

Angles in a Triangle

The third angle of a triangle

1.



— degrees

$$55 + 75 = 130$$

$$180 - 130 = 50^\circ$$

Every triangle's three angles add to 180 — and that is not a number to take on trust. Tear the three corners off any triangle you like and they fit together into a straight line, every time.

Two of them are given: 55 and 75, which is 130 between them.

So the third takes up what is left of the 180: $180 - 130 = 50^\circ$.

2.



— degrees

$$25 + 60 = 85$$

$$180 - 85 = 95^\circ$$

Every triangle's three angles add to 180 — and that is not a number to take on trust. Tear the three corners off any triangle you like and they fit together into a straight line, every time.

Two of them are given: 25 and 60, which is 85 between them.

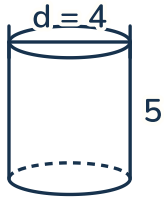
So the third takes up what is left of the 180: $180 - 85 = 95^\circ$.

Solutions (12 of 15)

Volume of Cylinders

Volume of a cylinder

1.



base: 12.56

$$12.56 \times 5 = \mathbf{62.8}$$

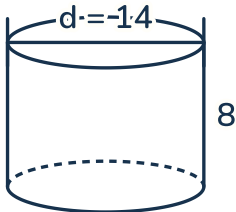
The 4 cm goes right across, so it is the diameter. Halve it first: the radius is 2. Every one of these formulas SQUARES the radius, so getting this wrong is out by a factor of four, not two.

Same idea as a box: the area of the base times how tall it is. Here the base is a circle, and that is the only difference.

The circle's area is $\pi \times r \times r = 3.14 \times 2 \times 2 = 12.56$ square cm.

Times the height: $12.56 \times 5 = 62.8$ cubic cm.

2.



base: 153.86

$$153.86 \times 8 = \mathbf{1230.88}$$

The 14 cm goes right across, so it is the diameter. Halve it first: the radius is 7. Every one of these formulas SQUARES the radius, so getting this wrong is out by a factor of four, not two.

Same idea as a box: the area of the base times how tall it is. Here the base is a circle, and that is the only difference.

The circle's area is $\pi \times r \times r = 3.14 \times 7 \times 7 = 153.86$ square cm.

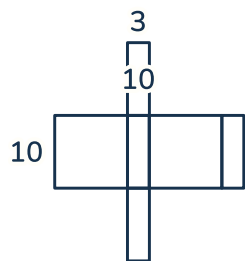
Times the height: $153.86 \times 8 = 1230.88$ cubic cm.

Solutions (13 of 15)

Surface Area

Surface area of a box

1.



_____ cm²

front and back: $2 \times 3 \times 10 = 60$

the two sides: $2 \times 10 \times 10 = 200$

top and bottom: $2 \times 3 \times 10 = 60$

total: **320**

A net lays all six faces out flat, so none of them is hidden — which is the whole reason a net is easier than the solid. They still come in three PAIRS.

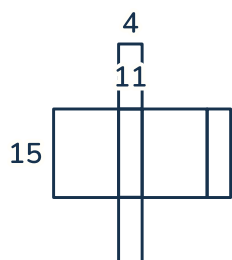
Front and back are 3 by 10, and they are identical — so that pair is $2 \times 3 \times 10 = 60$.

The two sides are 10 by 10, and they are identical — so that pair is $2 \times 10 \times 10 = 200$.

Top and bottom are 3 by 10, and they are identical — so that pair is $2 \times 3 \times 10 = 60$.

Three pairs, six faces, none missed: $60 + 200 + 60 = 320$ square cm.

2.



_____ cm²

front and back: $2 \times 4 \times 15 = 120$

the two sides: $2 \times 11 \times 15 = 330$

top and bottom: $2 \times 4 \times 11 = 88$

total: **538**

A net lays all six faces out flat, so none of them is hidden — which is the whole reason a net is easier than the solid. They still come in three PAIRS.

Front and back are 4 by 15, and they are identical — so that pair is $2 \times 4 \times 15 = 120$.

The two sides are 11 by 15, and they are identical — so that pair is $2 \times 11 \times 15 = 330$.

Top and bottom are 4 by 11, and they are identical — so that pair is $2 \times 4 \times 11 = 88$.

Three pairs, six faces, none missed: $120 + 330 + 88 = 538$ square cm.

Solutions (14 of 15)

Probability

Probability of one event

1. 3 red, 7 blue, 2 green $P(\text{red})$ _____

$$3 + 7 + 2 = 12$$

$$\frac{3}{12} = \frac{1}{4}$$

Count EVERYTHING first, before the ones being asked about: $3 + 7 + 2 = 12$ altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Now the ones that count as a win: 3 red.

Chance is the wins OVER the total — not over the rest. So it is 3 out of 12.

And $3/12$ can be written in bigger pieces: $1/4$.

2. 2 red, 8 blue, 2 green $P(\text{not blue})$ _____

$$2 + 8 + 2 = 12$$

$$\frac{4}{12} = \frac{1}{3}$$

Count EVERYTHING first, before the ones being asked about: $2 + 8 + 2 = 12$ altogether. That is the bottom of the fraction, and it is the half that gets swapped for the wrong number.

Read the question again: it asks for NOT blue. So the wins are everything ELSE in the bag — all 12 of them except the 8 blue, which is $12 - 8 = 4$.

Chance is the wins OVER the total — not over the rest. So it is 4 out of 12.

Check it: the chance of blue and the chance of not blue have to fill the bag between them. 8 out of 12 and 4 out of 12 make 12 out of 12 — the whole bag, which is 1. If they do not add up, one of the two counts is wrong.

And $4/12$ can be written in bigger pieces: $1/3$.

Mean, Median and Mode

Mean, median, mode and range

1. Mean
34, 8, 8, 42, 33

$$\begin{array}{r} 34 \quad 8 \quad 8 \quad 42 \quad 33 \\ 34 + 8 + 8 + 42 + 33 = 125 \\ 125 \div 5 = 25 \end{array}$$

The mean is what every number WOULD be if the total were shared out evenly. So first find the total.

$$34 + 8 + 8 + 42 + 33 = 125$$

Now share it between all 5 of them: $125 \div 5 = 25$.

Solutions (15 of 15)

Mean, Median and Mode (continued)

Mean, median, mode and range (continued)

2. **Median**
25, 7, 7, 15, 21

given:	25	7	7	15	21
sorted:	7	7	15	21	25

The median is the one in the MIDDLE. Middle of the sorted row, though — not the row as it was given.

So put them in order, smallest first.

Count in from both ends. 15 is the one left in the middle, so that is the median.