

EXERCISE 2.6

1. Make F the subject of the formula, $C^{\circ} = \frac{5}{9} (F^{\circ} - 32)$.
2. The formula for finding simple interest is $I = PRT$.
 - (a) Make P the subject of the formula.
 - (b) Make T the subject of the formula.
3. Make ' a ' the subject of the formula $S = 2a + (n - 1)d$.
4. The volume of a cylinder is given by the formula, $V = \pi r^2 h$. Make ' h ' the subject of the formula.
5. The area of a trapezoid is $A = \frac{1}{2} h (b_1 + b_2)$, make h the subject of the formula.
6. If $y = mx + c$, then make ' x ' the subject of this equation.
7. Perimeter (P) of a rectangle is $P = 2(\ell + w)$, make ℓ as the subject of this formula.
8. The equation of a parabola is $y^2 = 4ax$, make ' x ' as a subject of this equation.
9. If $P = S - C$, where S is selling price and C is cost price. Make S as subject of the equation.
10. Volume of the cone is $V = \frac{1}{3} \pi r^2 h$, make ' h ' as subject of this formula.

EXERCISE 2.6 - CHANGE OF SUBJECT

Complete Step-by-Step Solutions

Question 1: Make F the subject of $C^{\circ} = \frac{5}{9} (F^{\circ} - 32)$

Step 1: Given equation

$$C = \frac{5}{9} (F - 32)$$

Step 2: Multiply both sides by 9

$$9C = 5(F - 32)$$

Step 3: Divide both sides by 5

$$\frac{9C}{5} = F - 32$$

Step 4: Add 32 to both sides

$$F = \frac{9C}{5} + 32$$

Answer: $F = \frac{9C}{5} + 32$

Question 2: $I = PRT$

(a) Make **P** the subject

Step 1: Given $I = P \cdot R \cdot T$

Step 2: Divide both sides by RT

$$P = \frac{I}{RT}$$

Answer: $P = \frac{I}{RT}$

(b) Make **T** the subject

Step 1: Given $I = P \cdot R \cdot T$

Step 2: Divide both sides by PR

$$T = \frac{I}{PR}$$

Answer: $T = \frac{I}{PR}$

Question 3: Make a the subject of $S = 2a + (n - 1)d$

Step 1: Given equation

$$S = 2a + (n - 1)d$$

Step 2: Subtract $(n - 1)d$ from both sides

$$S - (n - 1)d = 2a$$

Step 3: Divide both sides by 2

$$a = \frac{S - (n - 1)d}{2}$$

Answer: $a = \frac{S - (n - 1)d}{2}$

Question 4: Make h the subject of $V = \pi r^2 h$

Step 1: Given equation

$$V = \pi r^2 h$$

Step 2: Divide both sides by πr^2

$$h = \frac{V}{\pi r^2}$$

Answer: $h = \frac{V}{\pi r^2}$

Question 5: Make h the subject of $A = \frac{1}{2}h(b_1 + b_2)$

Step 1: Given equation

$$A = \frac{1}{2}h(b_1 + b_2)$$

Step 2: Multiply both sides by 2

$$2A = h(b_1 + b_2)$$

Step 3: Divide both sides by $(b_1 + b_2)$

$$h = \frac{2A}{b_1 + b_2}$$

Answer: $h = \frac{2A}{b_1 + b_2}$

Question 6: Make x the subject of $y = mx + c$

Step 1: Given equation

$$y = mx + c$$

Step 2: Subtract c from both sides

$$y - c = mx$$

Step 3: Divide both sides by m

$$x = \frac{y - c}{m}$$

Answer: $x = \frac{y - c}{m}$

Question 7: Make l the subject of $P = 2(l + w)$

Step 1: Given equation

$$P = 2(l + w)$$

Step 2: Divide both sides by 2

$$\frac{P}{2} = l + w$$

Step 3: Subtract w from both sides

$$l = \frac{P}{2} - w$$

Answer: $l = \frac{P}{2} - w$

Question 8: Make x the subject of $y^2 = 4ax$

Step 1: Given equation

$$y^2 = 4ax$$

Step 2: Divide both sides by $4a$

$$x = \frac{y^2}{4a}$$

Answer: $x = \frac{y^2}{4a}$

Summary Table

	Original Formula	Subject	Result
1	$C = \frac{5}{9}(F - 32)$	F	$F = \frac{9C}{5} + 32$
2(a)	$I = PRT$	P	$P = \frac{I}{RT}$
2(b)	$I = PRT$	T	$T = \frac{I}{PR}$
3	$S = 2a + (n - 1)d$	a	$a = \frac{S - (n-1)d}{2}$
4	$V = \pi r^2 h$	h	$h = \frac{V}{\pi r^2}$
5	$A = \frac{1}{2}h(b_1 + b_2)$	h	$h = \frac{2A}{b_1 + b_2}$
6	$y = mx + c$	x	$x = \frac{y - c}{m}$
7	$P = 2(l + w)$	l	$l = \frac{P}{2} - w$
8	$y^2 = 4ax$	x	$x = \frac{y^2}{4a}$

Key Steps for Changing Subject

1. **Identify the term** containing the desired subject
2. **Move all other terms** to the other side
3. **Perform inverse operations** (addition/subtraction, multiplication/division)
4. **Isolate** the subject on one side
5. **Simplify** if necessary

EXERCISE 2.6 - CHANGE OF SUBJECT (Continued)

Question 9: If $P = S - C$, make S the subject

Step 1: Given equation

$$P = S - C$$

Step 2: Add C to both sides

$$P + C = S$$

Answer: $S = P + C$

Question 10: Volume of cone $V = \frac{1}{3} \pi r^2 h$, make h the subject

Step 1: Given equation

$$V = \frac{1}{3}\pi r^2 h$$

Step 2: Multiply both sides by 3

$$3V = \pi r^2 h$$

Step 3: Divide both sides by πr^2

$$h = \frac{3V}{\pi r^2}$$

Answer: $h = \frac{3V}{\pi r^2}$

Summary Table

	Original Formula	Subject	Result
9	$P = S - C$	S	$S = P + C$
10	$V = \frac{1}{3}\pi r^2 h$	h	$h = \frac{3V}{\pi r^2}$