

Multiplicative Comparison

Number & Operations · Grade 4

Score: _____ / 16

★ Hard · 16 Questions

Solve each problem. Show your work in the space provided. Write your answer on the line.

1. A number is 5 times another.
If the larger is decreased by 12, they become equal.
Find both numbers.

Answer: _____

2. Tom is 4 times as old as Jerry.
In 6 years Tom will be twice Jerry's age.
How old are they now?

Answer: _____

3. A train travels 5 times as fast as a bicycle.

The bicycle goes 12 km/h.

How long does the train take to travel 300 km?

Answer: _____

4. Box A has 6 times as many apples as Box B.

After 30 apples are moved from A to B, they have equal amounts.

How many apples were in each box originally?

Answer: _____

5. A has 3 times as many stickers as B.

After A gives 12 to B, they have equal amounts.

How many did each start with?

Answer: _____

6. In a bag, there are red, blue, and green marbles.

Blue = $2 \times$ red. Green = $3 \times$ red.

There are 60 marbles total.

How many of each colour?

Answer: _____

7. Red = 10, Blue = $2 \times$ Red, Green = $3 \times$ Red.

How many of each colour, and what fraction is each?

Answer: _____

8. A garden has 4 times as many tulips as roses.

There are 7 rose bushes.

How many tulips, and how many flowers in total?

Answer: _____

9. A farmer has chickens and cows.

The number of chickens is 4 times the number of cows.

There are 120 legs in total. (Chickens have 2 legs, cows have 4.)

How many chickens and how many cows?

Answer: _____

10. A farmer has chickens and cows.

Chickens = $4 \times$ cows.

Total legs = 120. (Chickens have 2 legs, cows have 4.)

How many of each?

Answer: _____

- 11.** Height of mountain A is 3 times mountain B.

Mountain B is 4 times mountain C.

Mountain C is 250 m.

How tall is mountain A?

Answer: _____

- 12.** Brand A juice costs \$1.20 per bottle.

Brand B juice costs 3 times as much as Brand A.

What is the total cost of 1 of each?

Answer: _____

- 13.** A map uses a scale where $1 \text{ cm} = 5 \text{ km}$.
Two cities are 13 cm apart on the map.
How far apart are they in reality?

Answer: _____

- 14.** Lily earns 5 times what Max earns.
Max earns \$240 per week.
How much more does Lily earn than Max per week?
How much more per year (52 weeks)?

Answer: _____

- 15.** A book has 3 times as many pages as a magazine.
A newspaper has half as many pages as the magazine.
The book has 180 pages.
How many pages does the newspaper have?

Answer: _____

- 16.** A store sells pens and pencils.
For every 3 pens sold, 7 pencils are sold.
If 105 pencils were sold, how many pens were sold?

Answer: _____

Answer Key Multiplicative Comparison — Hard

1. Small = 3, Large = 15

$\text{Large} = 5 \times \text{small}$. $\text{Large} - 12 = \text{small}$. $5s - 12 = s$. $4s = 12$. $s = 3$. $\text{Large} = 15$.

2. Jerry: 3, Tom: 12

Let Jerry = j now. Tom = $4j$. In 6 years: $4j + 6 = 2(j + 6) \rightarrow 4j + 6 = 2j + 12 \rightarrow 2j = 6 \rightarrow j = 3$. Tom = 12.
Check: in 6 years Tom = 18, Jerry = 9; $18 = 2 \times 9 \checkmark$.

3. 5 hours

$\text{Train speed} = 5 \times 12 = 60 \text{ km/h}$. $\text{Time} = 300 \div 60 = 5 \text{ hours}$.

4. Box A: 72, Box B: 12

Let $B = b$. $A = 6b$. After moving 30: $6b - 30 = b + 30 \rightarrow 5b = 60 \rightarrow b = 12$. $A = 72$. Check: $72 - 30 = 42$, $12 + 30 = 42 \checkmark$.

5. B: 12 stickers, A: 36 stickers

$A = 3B$. $A - 12 = B + 12 \rightarrow 3B - 12 = B + 12 \rightarrow 2B = 24 \rightarrow B = 12$. $A = 36$.

6. Red: 10, Blue: 20, Green: 30.

Let red = r , blue = $2r$, green = $3r$. $r + 2r + 3r = 6r = 60$. $r = 10$. Red = 10, Blue = 20, Green = 30. Check: $10 + 20 + 30 = 60 \checkmark$.

7. Red: 10, Blue: 20, Green: 30. Total: 60. Red: 1/6, Blue: 1/3, Green: 1/2.

Red = 10, Blue = 20, Green = 30, Total = 60. Fractions: $10/60 = 1/6$, $20/60 = 1/3$, $30/60 = 1/2$.

8. 28 tulips. 35 flowers in total.

$\text{Tulips} = 4 \times 7 = 28$. $\text{Total} = 7 + 28 = 35$.

9. Cows: 10, Chickens: 40

Let cows = c , chickens = $4c$. Legs: $2 \times 4c + 4 \times c = 8c + 4c = 12c = 120$. $c = 10$. Chickens = 40. Check: $40 \times 2 + 10 \times 4 = 80 + 40 = 120 \checkmark$.

10. Cows: 10, Chickens: 40

Let cows= c , chickens= $4c$. Legs: $2 \times 4c + 4 \times c = 8c + 4c = 12c = 120$. $c = 10$. Chickens= 40 .

11. 3,000 m

$C = 250$. $B = 4 \times 250 = 1,000$. $A = 3 \times 1,000 = 3,000$ m.

12. \$4.80

Brand B = $3 \times \$1.20 = \3.60 . Total = $\$1.20 + \$3.60 = \$4.80$.

13. 65 km

$13 \text{ cm} \times 5 \text{ km/cm} = 65 \text{ km}$.

14. Per week: \$960 more. Per year: \$49,920 more.

Lily = $5 \times 240 = \$1,200$. Difference = $1,200 - 240 = \$960/\text{week}$. Per year: $960 \times 52 = \$49,920$.

15. 30 pages

Book = $3 \times \text{magazine} = 180$. Magazine = 60 . Newspaper = $60 \div 2 = 30$ pages.

16. 45 pens

Pencils:pens = 7:3. Pens = $105 \times (3/7) = 45$ pens.
