

Final Test — Form A

Answer key

6.RP

6.NS

6.EE

6.G

6.SP

30 problems

1. Write the ratio 18 to 24 in simplest form.

Answer 3 : 4 $\gcd(18, 24) = 6$, so $18 : 24 = 3 : 4$.

2. Evaluate $3^2 + 4 \times (8 - 5)$.

Answer 21Parentheses first: $8 - 5 = 3$. Then $3^2 = 9$ and $4 \times 3 = 12$, so $9 + 12 = 21$.

3. Compute $\frac{3}{4} \div \frac{2}{5}$.

Answer $\frac{15}{8}$ Multiply by the reciprocal: $\frac{3}{4} \times \frac{5}{2} = \frac{15}{8}$.

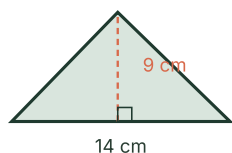
4. Order these integers from least to greatest: -5 , 3 , -1 , 0 , 2 .

Answer -5 , -1 , 0 , 2 , 3 On a number line, more-negative values sit farthest left: $-5 < -1 < 0 < 2 < 3$.

5. What is 35% of 240?

Answer 84 $35\% = \frac{35}{100} = 0.35$, so $0.35 \times 240 = 84$.

6. Find the area of the triangle below.

**Answer** 63 square cmArea = $\frac{1}{2}bh = \frac{1}{2} \times 14 \times 9 = 63$ square cm.

7. A reader types 252 words in 6 minutes. What is the unit rate in words per minute?

Answer 42 words per minute $\frac{252 \text{ words}}{6 \text{ min}} = 42 \text{ words per minute}$.

8. Find the value of $2x^2 + 7$ when $x = 3$.

Answer 25 $2(3)^2 + 7 = 2 \times 9 + 7 = 18 + 7 = 25$.

9. Find the LCM of 8 and 12.

Answer 24

Multiples of 8: 8, 16, 24, ...; of 12: 12, 24, ... The least common multiple is 24.

10. Solve for x : $7x = 84$.

Answer $x = 12$

Divide both sides by 7: $x = \frac{84}{7} = 12$.

11. Write an algebraic expression for "7 less than twice a number n ."

Answer $2n - 7$

Twice a number is $2n$; 7 less than that subtracts 7: $2n - 7$.

12. Compute $12.6 \div 0.7$.

Answer 18

Multiply both numbers by 10: $\frac{126}{7} = 18$.

13. Use the distributive property to write $36 + 24$ as a product of the GCF and a sum.

Answer $12(3 + 2)$

$\text{gcd}(36, 24) = 12$. Factor it out: $36 + 24 = 12 \times 3 + 12 \times 2 = 12(3 + 2)$.

14. Solve the inequality $x + 5 < 12$.

Answer $x < 7$

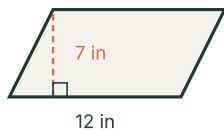
Subtract 5 from both sides: $x < 12 - 5$, so $x < 7$.

15. Simplify by combining like terms: $8x - 3x + 5$.

Answer $5x + 5$

Combine the x -terms: $8x - 3x = 5x$, giving $5x + 5$.

16. Find the area of the parallelogram below.



Answer 84 square in

Area = $b \times h = 12 \times 7 = 84$ square in.

17. Reflect the point $(4, -2)$ across the x -axis. What are the coordinates of its image?

Answer $(4, 2)$

Reflecting across the x -axis keeps x and negates y : $(4, -2) \rightarrow (4, 2)$.

18. Which expression is equivalent to $3(2x + 5)$?

Answer C) $6x + 15$

Distribute the 3: $3 \times 2x + 3 \times 5 = 6x + 15$.

19. Compute $4256 \div 7$.

Answer 608

$7 \times 600 = 4200$, leaving 56; $7 \times 8 = 56$. So $4256 \div 7 = 608$.

20. Complete the table of equivalent ratios for 3 teachers to 8 students.

Teachers	3	9	?
Students	8	?	40

Answer Students: 24; Teachers: 15

Keep the ratio 3 : 8. 9 teachers → 24 students; 40 students → 15 teachers.

21. The table shows the total cost c for buying t team T-shirts. Write an equation that gives c in terms of t .

t	1	2	3
c	9	18	27

Answer $c = 9t$

Each shirt adds \$9: $\frac{c}{t} = 9$ in every column, so $c = 9t$.

22. Compute $3\frac{3}{4} \div 1\frac{1}{2}$.

Answer $\frac{5}{2}$

Rewrite as $\frac{15}{4} \div \frac{3}{2} = \frac{15}{4} \times \frac{2}{3} = \frac{30}{12} = \frac{5}{2}$.

23. The dot plot shows the number of goals the school soccer team scored in each of 10 games. Find the mean, median, and mode of the data.



Answer Mean = 2; Median = 2; Mode = 2

Counts: one 0, two 1s, four 2s, two 3s, one 4 (10 games). Sum = $0 + 2 + 8 + 6 + 4 = 20$, so mean = $\frac{20}{10} = 2$. The 5th and 6th values are both 2, so median = 2; 2 occurs most often, so mode = 2.

24. A box of 8 pens costs \$6.00, and a box of 15 pens costs \$10.50. Which box is the better buy? Justify with unit prices.

Answer The 15-pen box (\$0.70 each vs. \$0.75 each)

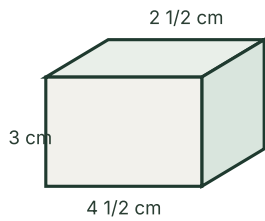
$\$6.00 \div 8 = \0.75 per pen. $\$10.50 \div 15 = \0.70 per pen. The 15-pen box costs less per pen.

25. On a quiz, Maria answered 18 of the 24 questions correctly. What percent did she answer correctly?

Answer 75%

$\frac{18}{24} = \frac{3}{4} = 0.75 = 75\%$.

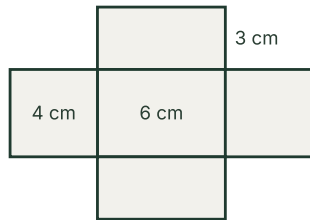
26. Find the volume of the rectangular prism below.



Answer $\frac{135}{4}$ cubic cm (or $33\frac{3}{4}$ cubic cm)

$$\text{Volume} = l \times w \times h = \frac{9}{2} \times 3 \times \frac{5}{2} = \frac{135}{4} = 33\frac{3}{4} \text{ cubic cm.}$$

27. The figure shows the net of a rectangular box. Find its total surface area.



Answer 108 square cm

$$\text{The box is } 6 \times 4 \times 3. \text{ Surface area} = 2(lw + lh + wh) = 2(6 \cdot 4 + 6 \cdot 3 + 4 \cdot 3) = 2(24 + 18 + 12) = 108 \text{ square cm.}$$

28. The gym floor is an L-shaped region: a full rectangle 10 m wide and 6 m deep, with a 4 m by 3 m storage corner removed. What is the area of the gym floor?

Answer 48 square m

$$\text{Full rectangle} = 10 \times 6 = 60 \text{ square m. Removed corner} = 4 \times 3 = 12 \text{ square m. Floor} = 60 - 12 = 48 \text{ square m.}$$

29. Coach has \$200 to buy basketballs that cost \$24 each. What is the greatest number of basketballs she can buy, and how much money is left over?

Answer 8 basketballs, with \$8 left over

$$\$24 \times 8 = \$192 \leq \$200, \text{ but } \$24 \times 9 = \$216 > \$200. \text{ So 8 balls; } \$200 - \$192 = \$8 \text{ remains.}$$

30. Liam's first four science test scores are 112, 98, 134, 120. What score must he earn on his fifth test so that his mean for all five tests is exactly 120?

Answer 136

$$\text{Five tests averaging 120 need a total of } 5 \times 120 = 600. \text{ The first four sum to } 112 + 98 + 134 + 120 = 464, \text{ so the fifth must be } 600 - 464 = 136.$$