

Solutions for Rumack's Preparation Workbook: 2.2

1. To find the area of the square, determine the side length and multiply it by itself. $Side\ length = 12\ cm - 4\ cm = 8\ cm$. $Area = 8\ cm \times 8\ cm = 64\ cm^2$. The answer is (A).
2. To find the base of the parallelogram, set up an equation and solve. $Area = base \times height$, $55\ m^2 = base \times 5\ m$, $55\ m^2 \div 5\ m = base$, $11\ m = base$. The answer is (D).
3. To find the total area of the grid, determine the number of squares and then multiply this by the area of each square. $Number\ of\ squares = 3 \times 5 = 15$.
 $Area = Number\ of\ squares \times Area\ of\ each\ square = 15 \times 4 = 60$. The answer is (B).
4. To find the length of the rectangle, first determine the area. $Area\ of\ rectangle = 2 \times 50\ mm^2 = 100\ mm^2$. List the possible length and width combinations whose product is 100: 1 and 100, 2 and 50, 4 and 25, 5 and 20. Choose the pair where the larger number is four times the smaller number. The answer is (A).
5. To find the number closest to the area of the triangle, calculate the area using the given measurements. $Area = base \times height \div 2 = 1.5 \times 0.8 \div 2 = 1.5 \times 0.4 = 0.6$. The answer is (E) 1.
6. To find the area of the shaded region, calculate the area of each shaded triangle and add these areas together. $Area = 1st\ triangle + 2nd\ triangle = (1.5\ cm \times 6\ cm \div 2) + (6.5\ cm \times 6\ cm \div 2) = 4.5\ cm^2 + 19.5\ cm^2 = 24\ cm^2$.
7. To find the value of x , set up an equation for the area and solve. $Area = length \times width$, $175 = 7x \times 4x$, $175 = 28x^2$, $175 \div 28 = x^2$, $6.25 = x^2$, $2.5^2 = x^2$, $2.5 = x$. The answer is (D).
8. To find the length of the unknown side of a right triangle, use the Pythagorean Theorem. $a^2 + b^2 = c^2$, $2.1^2 + 2.0^2 = c^2$, $4.41 + 4 = c^2$, $8.41 = c^2$, $2.9^2 = c^2$, $2.9 = c$. Since $2^2 < c^2 < 3^2$, we know that $2 < c < 3$. The answer is (C).
9. To find the difference between the two areas, calculate each one and then subtract.
 $Area\ of\ rectangle = length \times width = 12\ units \times 7\ units = 84\ units^2$, $Area\ of\ square = width \times width = 7\ units \times 7\ units = 49\ units^2$. $Difference = 84\ units^2 - 49\ units^2 = 35\ units^2$. The answer is (B).
10. To find the area of the rectangle, multiply the length by the width. $Area = length \times width = 9x \times 5x = 45x^2$. The answer is (C).
11. To find the area of the triangle, multiply the base by the height and divide by 2. $Area = base \times height \div 2 = 8 \times 6 \div 2 = 24$. The answer is (D).
12. To find the area of the rectangle, multiply the length by the width. $Area = length \times width = 7.5\ units \times 4\ units = 30\ units\ squared$. The answer is (D).

13. To find double the area of the rectangle, multiply the length by the width and then multiply by 2. $Area = length \times width$, $Double\ the\ area = length \times width \times 2 = 6.2\ units \times 5.5\ units \times 2 = 6.2\ units \times 11\ units = 68.2\ units^2$. The answer is (A).
14. To find the length, set up an equation and solve. $Area = length \times width$, $22.8\ cm^2 = length \times 4\ cm$, $22.8\ cm^2 \div 4\ cm = length$, $5.7\ cm = length$. The answer is (D).
15. To find the area of the square, set up an equation using the Pythagorean Theorem, and solve for the square of the hypotenuse. $a^2 + b^2 = c^2$, $6^2 + 8^2 = c^2$, $36 + 64 = c^2$, $100 = c^2$. The square of the hypotenuse is represented by c^2 . There is no need to find c .
16. To find the area of the triangle, multiply the base by the height and divide by 2. $Area = base \times height \div 2 = 6\ units \times 4.2\ units \div 2 = 6\ units \times 2.1\ units = 12.6\ units\ squared$. The answer is (B).
17. To find the closest true area, calculate the actual area by multiplying the width by the length, and then compare with the answer choices. $Area = length \times width = 5.52\ units \times 3.25\ units = 17.94\ units\ squared$. This is closest to $18\ units\ squared$, so the answer is (A).
18. To find the area of the rectangle, multiply the length by the width. $Area = length \times width = 11\ units \times 4.7\ units = 51.7\ units\ squared$.
19. To find double the area of the rectangle, multiply the length by the width and then multiply by 2. $4.5 \times 4.8 \times 2 = 43.2\ units^2$. The answer is (E).
20. To find the length of the hypotenuse, use the Pythagorean Theorem. $a^2 + b^2 = c^2$, $(5\ mm)^2 + (12\ mm)^2 = c^2$, $25\ mm^2 + 144\ mm^2 = c^2$, $169\ mm^2 = c^2$, $13\ mm = c$. The answer is (B).
21. To find the length of the hypotenuse, use the Pythagorean Theorem. $a^2 + b^2 = c^2$, $(4\ units)^2 + (7.5\ units)^2 = c^2$, $16\ units^2 + 56.25\ units^2 = c^2$, $72.25\ units^2 = c^2$. Using knowledge of square numbers, we know that $8 < c < 9$ because 72.25 is between 64 and 81. The appropriate answer choice is 8.5, so we check by multiplying the square of 8.5, which is 72.25. The answer is (A).
22. To find the area of the triangle, multiply the base by the height and divide by 2. $Area = base \times height \div 2 = 8\ units \times 12.4\ units \div 2 = 8\ units \times 6.2\ units = 49.6\ units\ squared$. The answer is (C).
23. To find the area of the third square, use the Pythagorean Theorem. $a^2 + b^2 = c^2$, $a^2 + 400\ mm^2 = 841\ mm^2$, $a^2 = 841\ mm^2 - 400\ mm^2 = 441\ mm^2$, $a = 21\ mm$. The answer is (C).
24. To find the area of $BFGC$, use the Pythagorean Theorem. $a^2 + b^2 = c^2$, $6.0^2 + 2.5^2 = c^2$, $36 + 6.25 = c^2$, $42.25 = c^2$. The answer is (B).

25. To find the area, determine the square of the side length using the Pythagorean Theorem and the measurements from the triangle. $a^2 + b^2 = c^2$, $6.0^2 + 2.5^2 = c^2$, $36 + 6.25 = c^2$, $42.25 = c^2$. The answer is (B).