R.1 – Practice Problems

Write the following numbers out **numerically**.

1. Three hundred and forty-two 342
2. Twenty-three and forty-seven hundredths 23.47
3. Three tenths 0.3
4. Three thousand, two hundred twenty-nine and eight hundredths 3229.08
5. Twelve thousand three hundred and five 12305
6. Forty-two thousandths 0.042
7. Thirteen and fifty-seven hundredths 13.57

Write the following numbers out **verbally**.

8. 14.1 Fourteen and one tenth

9. 23.76

Twenty three and seventy six hundredths

10. 0.003

Three thousandths

11. 34 540.3

Thirty-four thousand, five hundred forty and three tenths

12. 1 456 345.234

One million, four hundred fifty six thousand, three hundred forty-five and two hundred thirty four thousandths

What are the factors of the following numbers. Write them in factor pairs.

13. 64

1 · 64
2 · 32
4 · 16
8 · 8

14. 144

1 · 144
2 · 72
3 · 48
4 · 36
6 · 24
8 · 18
9 · 16
12 · 12

15. 36

1 · 36
2 · 18
3 · 12
4 · 9
6 · 6

16. 76

1 · 76
2 · 38
4 · 19

17. 112

1 · 112
2 · 56
4 · 28
7 · 16
8 · 14

18. 98

1 · 98
2 · 49
7 · 14

What are the **Square Roots** of the following numbers? Demonstrate by getting two identical factors.

19. 64

8 8

$\sqrt{64} = 8$

20. 196

2 98
2 49
7 7

2·7 2·7
14 14

$\sqrt{196} = 14$

21. 1296

3 432
3 144
12 12

$\underbrace{3 \cdot 12}_{36} \cdot \underbrace{3 \cdot 12}_{36}$

$\sqrt{1296} = 36$

22. 900

9 100
3 3 10 10

$\underbrace{3 \cdot 10}_{30} \cdot \underbrace{3 \cdot 10}_{30}$

$\sqrt{900} = 30$

23. 1764

$\underbrace{2\cdot3\cdot7}_{42}\cdot\underbrace{2\cdot3\cdot7}_{42}$

2 882
441 2
147 3
3 49
7 7

$\sqrt{1764} = 42$

24. 225

5 45
5 9
3 3

$\underbrace{3\cdot5}_{15}\cdot\underbrace{3\cdot5}_{15}$

$\sqrt{225} = 15$

25. 256

4 64
2 2 8 8

$\underbrace{2\cdot8}_{16}\cdot\underbrace{2\cdot8}_{16}$

$\sqrt{256} = 16$

26. 676

2 338
2 169
13 13

$\underbrace{2\cdot13}_{26}\cdot\underbrace{2\cdot13}_{26}$

$\sqrt{676} = 26$

Between what **two whole numbers** do the following square roots fall?

27. $\sqrt{156}$

$144 < 156 < 169$

$\sqrt{144} < \sqrt{156} < \sqrt{169}$

$12 < \sqrt{156} < 13$

Between 12 and 13

28. $\sqrt{402}$

$400 < 402 < 441$

$\sqrt{400} < \sqrt{402} < \sqrt{441}$

$20 < \sqrt{402} < 21$

Between 20 and 21

29. $\sqrt{11}$

$9 < 11 < 16$

$\sqrt{9} < \sqrt{11} < \sqrt{16}$

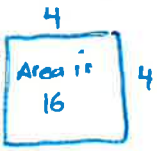
$3 < \sqrt{11} < 4$

Between 3 and 4

30. What is the **difference** between a **perfect square and a perfect cube**? Explain your answers verbally, numerically, and with a picture.

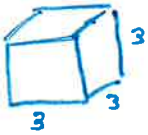
Perfect Square has 2 identical factors.

$4 \cdot 4 = 16$ 16 is a perfect square



Perfect cube has 3 identical factors

$3 \cdot 3 \cdot 3 = 27$ is a perfect cube



Volume is 27

Break the following numbers down to **Prime Factors,** use your **divisibility rules** to help break them down

31. 42

6 7

2 3

$\boxed{2 \cdot 3 \cdot 7}$

32. 36

6 6

2 3 2 3

$\boxed{2 \cdot 2 \cdot 3 \cdot 3}$

33. 72

8 9

2 4 3 3

2 2

$\boxed{2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$

34. 124

2 62

2 31

$\boxed{2 \cdot 2 \cdot 31}$

35. 153

3 51

3 17

$\boxed{3 \cdot 3 \cdot 17}$

36. 144

12 12

2 6 2 6

2 3 2 3

$\boxed{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3}$

37. 99

9 11

3 3

$\boxed{3 \cdot 3 \cdot 11}$

38. 23

All Ready Prime

39. 1170

117 10

3 39 2 5

3 13

$\boxed{2 \cdot 3 \cdot 3 \cdot 5 \cdot 13}$

40. 100

10 10

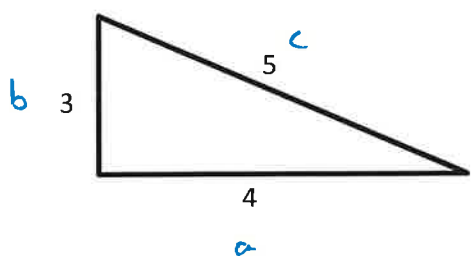
2 5 2 5

$\boxed{2 \cdot 2 \cdot 5 \cdot 5}$

Are the following triangles **Right Angle Triangles**? Prove your answer using the **Pythagorean Theorem**.

check: $a^2 + b^2 = c^2$

41.

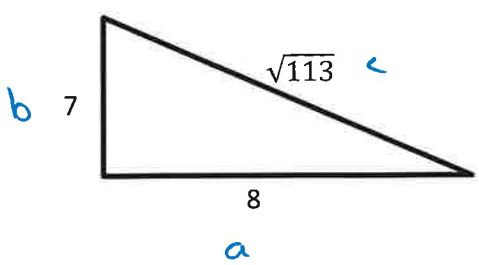


$3^2 + 4^2 = 5^2$

$9 + 16 = 25$

$25 = 25$ ✓

42.

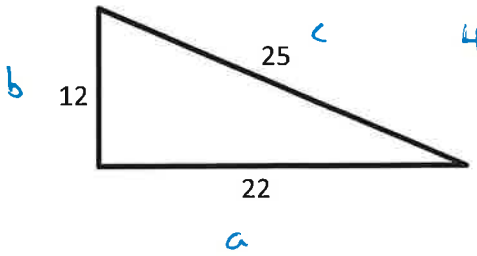


$8^2 + 7^2 = \sqrt{113}^2$

$64 + 49 = 113$

$113 = 113$ ✓

43.

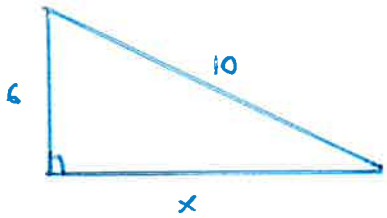


$22^2 + 12^2 = 25^2$

$484 + 144 = 625$

$628 = 625$ ×

44. If you worked for a construction company and your foreman tasked you with building a ramp exactly 10ft in length, but had to reach a height of 6 ft. How far back from the top of the ramp would you have to start building? Draw a picture to demonstrate your idea.



$10^2 - 6^2 = x^2$

$100 - 36 = x^2$

$64 = x^2$

$x = \sqrt{64}$

$x = 8$

$\boxed{\text{8 ft from the wall}}$

Find the LCM of the following sets of Numbers (Extending)

45. 18, 27

18: 2 9 → 3 3

27: 3 9 → 3 3

18: $2 \cdot 3^2$

27: 3^3

$2 \cdot 3^3 = \boxed{54}$

46. 8, 12

8: 2 4 → 2 2

12: 2 6 → 2 3

8: 2^3

12: 2^2 3

$2^3 \cdot 3 = \boxed{24}$

47. 5, 12, 15

5

12
2 6
2 3

15
3 5

5: $\cdot 5$

12: $2^2 \cdot 3 \cdot$

15: $3 \cdot 5$

$2^2 \cdot 3 \cdot 5 = \boxed{60}$

48. 8, 12, 18

8
2 4
2 2

12
2 6
2 3

18
2 9
3 3

8: 2^3

12: $2^2 \cdot 3$

18: $2 \cdot 3^2$

$2^3 \cdot 3^2 = \boxed{72}$

49. 12, 24, 36

12
2 6
2 3

24
2 12
2 6
2 3

36
2 18
2 9
3 3

12: $2^2 \cdot 3$

24: $2^3 \cdot 3$

36: $2^2 \cdot 3^2$

$2^3 \cdot 3^2 = \boxed{72}$

50. 3, 5, 18

3: 3

5: 5

18: $2 \cdot 3^2$

$2 \cdot 3^2 \cdot 5 = \boxed{90}$