Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

April 13-17, 2020
Course: Pre-Algebra
Teacher(s): Mrs. Frank leslie.frank@greatheartsirving.org
         Mrs. Voltin mary.voltin@greatheartsirving.org

Weekly Plan:

Monday, April 13
☐ Powers Speed Test
☐ Lesson 10-1 Square Roots

Tuesday, April 14
☐ Roots Speed Test
☐ Lesson 10-1 Square Roots

Wednesday, April 15
☐ Subtraction Speed Test
☐ Lesson 10-4 The Pythagorean Theorem

Thursday, April 16
☐ Multiplication Speed Test
☐ Lesson 10-4 The Pythagorean Theorem

Friday, April 17
☐ Division Speed Test
☐ Lesson 10-4 The Pythagorean Theorem

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

_____

Student Signature

_____

Parent Signature

Monday, April 13

This week, we will begin covering new material. This will require some determined effort on your part. You will need to read the lesson yourself, try the examples on your own, and then contact me by email if you do not understand the new concept.

1. Your speed test for the day will be the powers speed test. As you did the last two weeks, time yourself, and write the time it took you to complete the entire test at the top of the page. After you have finished the test, use the answer key to check for accuracy. Write your score at the top of the page.
2. Read lesson 10-1, Square Roots, on page 356. Work the Class Exercises on page 356-357, #1-15, all.

Please do not look at your answer key until you have worked every problem!

Tuesday, April 14

1. Your speed test for today will be the roots speed test. This is the hardest test, but this is the subject that we're covering right now. **You only have to do the first column of the test.** We are just covering square roots, so you don't need to do the cubic roots, fourth roots, or fifth roots! (However, if you want to try...please do!) You might not get many of them right. That is OK!
2. Review lesson 10-1. If you would like some more help, you can go here:

https://www.khanacademy.org/math/pre-algebra/pre-algebra-exponents-radicals/pre-algebra-square-roots/v/introduction-to-square-roots?modal=1

And here:

https://www.khanacademy.org/math/pre-algebra/pre-algebra-exponents-radicals/pre-algebra-square-roots/v/understanding-square-roots?modal=1

Your actual assignment for today is HW 10-1, pg. 357, Written Exercises, #2-32, evens.

Wednesday, April 15

1. Your speed test for today will be subtraction.
2. Read lesson 10-4 on pages 364-365. This is a very important concept, so read it slowly and carefully! Try working the examples as you read through the lesson. Go back and re-read the lesson again. Then work the Class Exercises, all of them, on page 365.

Thursday, April 16

1. Your speed test for today will be multiplication.
2. Re-read lesson 10-4. If you need more help, you can go here:

https://www.khanacademy.org/math/basic-geo/basic-geometry-pythagorean-theorem/geo-pythagorean-theorem/v/the-pythagorean-theorem

Your assignment for today is HW 10.4, Written Exercises, page 366, #2-18, evens, #22, 24. Don't forget that you can use the square root table on page 528 of your textbook to help solve #14-18.

Friday, April 17

1. Your speed test for today will be division.
2. Re-read lesson 10-4. Go back to the link above if you need more help. Your homework assignment for today is HW 10-4, Problems, pages 366-368, #1-6, all. You may use a calculator to find square roots that are not on the table on page 528.

2 +3	8 +4	2 +9	7 +2	8 +8
4 +6	9 +5	7 +7	6 +8	3 +5
7 +8	4 +7	5 +7	2 +5	9 +6
3 +9	3 +3	7 +3	3 +4	8 +2
5 +4	6 +7	4 +2	9 +4	6 +3
6 +6	8 +9	5 +5	6 +2	9 +9
7 +9	4 +4	8 +3	5 +6	8 +5

5	12	11	9	16
- 2	- 4	- 9	- 7	- 8
10	14	14	14	8
- 6	- 5	- 7	- 6	- 3
15	11	12	7	15
- 7	- 4	- 7	- 2	- 6
12	6	10	7	10
- 9	- 3	- 3	- 4	- 8
9	13	6	13	9
- 4	- 7	- 2	- 9	- 3
12	17	10	8	18
- 6	- 9	- 5	- 6	- 9
16	8	11	11	13
- 9	- 4	- 3	- 6	- 5

2	8	2	7	8
x 3	x 4	x 9	x 2	x 8

4	9	7	6	3
x 6	x 5	x 7	x 8	x 5

7	4	5	2	9
x 8	x 7	x 7	x 5	x 6

3	3	7	3	8
x 9	x 3	x 3	x 4	x 2

5	6	4	9	6
x 4	x 7	x 2	x 4	x 3

6	8	5	6	9
x 6	x 9	x 5	x 2	x 9

7	4	8	5	8
x 9	x 4	x 3	x 6	x 5

6 ÷ 3	32 ÷ 4	18 ÷ 9	14 ÷ 2	64 ÷ 8
24 ÷ 6	45 ÷ 5	49 ÷ 7	48 ÷ 8	15 ÷ 5
56 ÷ 8	28 ÷ 7	35 ÷ 7	10 ÷ 5	54 ÷ 6
27 ÷ 9	9 ÷ 3	21 ÷ 3	12 ÷ 4	16 ÷ 2
20 ÷ 4	42 ÷7	8 ÷ 2	36 ÷ 4	18 ÷ 3
36 ÷ 6	72 ÷ 9	25 ÷ 5	12 ÷ 2	81 ÷ 9
63 ÷ 9	16 ÷ 4	24 ÷ 3	30 ÷ 6	40 ÷ 5

Name_____

Section_____

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

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

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

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

$6^2 =$ $6^3 =$

$7^2 =$ $7^3 =$

$8^2 =$ $8^3 =$

$9^2 =$ $9^3 =$

$10^2 =$ $10^3 =$

$11^2 =$

$12^2 =$

$13^2 =$

$14^2 =$

$15^2 =$

$16^2 =$

$17^2 =$

$18^2 =$

$19^2 =$

$20^2 =$

Name_____
Section_____

$\sqrt[2]{36} =$ $\sqrt[3]{27} =$ $\sqrt[4]{81} =$ $\sqrt[5]{3125} =$

$\sqrt[2]{361} =$ $\sqrt[3]{1000} =$ $\sqrt[4]{625} =$ $\sqrt[5]{243} =$

$\sqrt[2]{64} =$ $\sqrt[3]{216} =$ $\sqrt[4]{256} =$ $\sqrt[5]{1024} =$

$\sqrt[2]{25} =$ $\sqrt[3]{8} =$ $\sqrt[4]{16} =$ $\sqrt[5]{32} =$

$\sqrt[2]{100} =$ $\sqrt[3]{729} =$

$\sqrt[2]{4} =$ $\sqrt[3]{64} =$

$\sqrt[2]{121} =$ $\sqrt[3]{512} =$

$\sqrt[2]{16} =$ $\sqrt[3]{343} =$

$\sqrt[2]{169} =$ $\sqrt[3]{125} =$

$\sqrt[2]{49} =$

$\sqrt[2]{289} =$

$\sqrt[2]{400} =$

$\sqrt[2]{9} =$

$\sqrt[2]{196} =$

$\sqrt[2]{324} =$

$\sqrt[2]{256} =$

$\sqrt[2]{225} =$

$\sqrt[2]{144} =$

2 +3 **5**	8 +4 **12**	2 +9 **11**	7 +2 **9**	8 +8 **16**
4 +6 **10**	9 +5 **14**	7 +7 **14**	6 +8 **14**	3 +5 **8**
7 +8 **15**	4 +7 **11**	5 +7 **12**	2 +5 **7**	9 +6 **15**
3 +9 **12**	3 +3 **6**	7 +3 **10**	3 +4 **7**	8 +2 **10**
5 +4 **9**	6 +7 **13**	4 +2 **6**	9 +4 **13**	6 +3 **9**
6 +6 **12**	8 +9 **17**	5 +5 **10**	6 +2 **8**	9 +9 **18**
7 +9 **16**	4 +4 **8**	8 +3 **11**	5 +6 **11**	8 +5 **13**

5	12	11	9	16
- 2	- 4	- 9	- 7	- 8
3	**8**	**2**	**2**	**8**
10	14	14	14	8
- 6	- 5	- 7	- 6	- 3
4	**9**	**7**	**8**	**5**
15	11	12	7	15
- 7	- 4	- 7	- 2	- 6
8	**7**	**5**	**5**	**9**
12	6	10	7	10
- 9	- 3	- 3	- 4	- 8
3	**3**	**7**	**3**	**2**
9	13	6	13	9
- 4	- 7	- 2	- 9	- 3
5	**6**	**4**	**4**	**6**
12	17	10	8	18
- 6	- 9	- 5	- 6	- 9
6	**8**	**5**	**2**	**9**
16	8	11	11	13
- 9	- 4	- 3	- 6	- 5
7	**4**	**8**	**5**	**8**

2	8	2	7	8
x 3	x 4	x 9	x 2	x 8
6	32	18	14	64

4	9	7	6	3
x 6	x 5	x 7	x 8	x 5
24	45	49	48	15

7	4	5	2	9
x 8	x 7	x 7	x 5	x 6
56	28	35	10	54

3	3	7	3	8
x 9	x 3	x 3	x 4	x 2
27	9	21	12	16

5	6	4	9	6
x 4	x 7	x 2	x 4	x 3
20	42	8	36	18

6	8	5	6	9
x 6	x 9	x 5	x 2	x 9
36	72	25	12	81

7	4	8	5	8
x 9	x 4	x 3	x 6	x 5
63	16	24	30	40

6 ÷ 3 **2**	32 ÷ 4 **8**	18 ÷ 9 **2**	14 ÷ 2 **7**	64 ÷ 8 **8**
24 ÷ 6 **4**	45 ÷ 5 **9**	49 ÷ 7 **7**	48 ÷ 8 **6**	15 ÷ 5 **3**
56 ÷ 8 **7**	28 ÷ 7 **4**	35 ÷ 7 **5**	10 ÷ 5 **2**	54 ÷ 6 **9**
27 ÷ 9 **3**	9 ÷ 3 **3**	21 ÷ 3 **7**	12 ÷ 4 **3**	16 ÷ 2 **8**
20 ÷ 4 **5**	42 ÷ 7 **6**	8 ÷ 2 **4**	36 ÷ 4 **9**	18 ÷ 3 **6**
36 ÷ 6 **6**	72 ÷ 9 **8**	25 ÷ 5 **5**	12 ÷ 2 **6**	81 ÷ 9 **9**
63 ÷ 9 **7**	16 ÷ 4 **4**	24 ÷ 3 **8**	30 ÷ 6 **5**	40 ÷ 5 **8**

Name_____

$2^2 =$ 4 $2^3 =$ 8 $2^4 =$ 16 $2^5 =$ 32

$3^2 =$ 9 $3^3 =$ 27 $3^4 =$ 81 $3^5 =$ 243

$4^2 =$ 16 $4^3 =$ 64 $4^4 =$ 256 $4^5 =$ 1024

$5^2 =$ 25 $5^3 =$ 125 $5^4 =$ 625 $5^5 =$ 3125

$6^2 =$ 36 $6^3 =$ 216

$7^2 =$ 49 $7^3 =$ 343

$8^2 =$ 64 $8^3 =$ 512

$9^2 =$ 81 $9^3 =$ 729

$10^2 =$ 100 $10^3 =$ 1000

$11^2 =$ 121

$12^2 =$ 144

$13^2 =$ 169

$14^2 =$ 196

$15^2 =$ 225

$16^2 =$ 256

$17^2 =$ 289

$18^2 =$ 324

$19^2 =$ 361

$20^2 =$ 400

Name_____
Section_____

$\sqrt[2]{36} = 6$

$\sqrt[3]{27} = 3$

$\sqrt[4]{81} = 3$

$\sqrt[5]{3125} = 5$

$\sqrt[2]{361} = 19$

$\sqrt[3]{1000} = 10$

$\sqrt[4]{625} = 5$

$\sqrt[5]{243} = 3$

$\sqrt[2]{64} = 8$

$\sqrt[3]{216} = 6$

$\sqrt[4]{256} = 4$

$\sqrt[5]{1024} = 4$

$\sqrt[2]{25} = 5$

$\sqrt[3]{8} = 2$

$\sqrt[4]{16} = 2$

$\sqrt[5]{32} = 2$

$\sqrt[2]{100} = 10$

$\sqrt[3]{729} = 9$

$\sqrt[2]{4} = 2$

$\sqrt[3]{64} = 4$

$\sqrt[2]{121} = 11$

$\sqrt[3]{512} = 8$

$\sqrt[2]{16} = 4$

$\sqrt[3]{343} = 7$

$\sqrt[2]{169} = 13$

$\sqrt[3]{125} = 5$

$\sqrt[2]{49} = 7$

$\sqrt[2]{289} = 17$

$\sqrt[2]{400} = 20$

$\sqrt[2]{9} = 3$

$\sqrt[2]{196} = 14$

$\sqrt[2]{324} = 18$

$\sqrt[2]{256} = 16$

$\sqrt[2]{225} = 15$

$\sqrt[2]{144} = 12$

1. $\sqrt{7}$ = the positive square root of 7

2. $3\sqrt{10}$ = 3 times the positive square root of 10

3. $-\sqrt{81}$ = the opposite of the square root of 81 or the negative square root of 81

4. $\sqrt{64}$ = the positive square root of 64

5. $2\sqrt{14}$ = 2 times the positive square root of 14 or 2 root 14

6. $\sqrt{16} = \boxed{4}$

7. $-\sqrt{36} = \boxed{-6}$

8. $\sqrt{21}$
$$4 \cdot 4 = 16 \qquad 5 \cdot 5 = 25$$
$$\sqrt{16} < \sqrt{21} < \sqrt{25}$$
$$4 < \sqrt{21} < 5$$
$$\boxed{\text{between 4 \& 5}}$$

9. $\sqrt{70}$
$$8 \cdot 8 = 64 \qquad 9 \cdot 9 = 81$$
$$\sqrt{64} < \sqrt{70} < \sqrt{81}$$
$$8 < \sqrt{70} < 9$$
$$\boxed{\text{between 8 \& 9}}$$

10. $\sqrt{50}$
$$7 \cdot 7 = 49 \qquad 8 \cdot 8 = 64$$
$$\sqrt{49} < \sqrt{50} < \sqrt{64}$$
$$7 < \sqrt{50} < 8$$
$$\boxed{\text{between 7 \& 8}}$$

11. $-\sqrt{49} = \boxed{-7}$

12. $\sqrt{81} = \boxed{9}$

13. $\sqrt{69}$
$$8 \cdot 8 = 64 \qquad 9 \cdot 9 = 81$$
$$\sqrt{64} < \sqrt{69} < \sqrt{81}$$
$$8 < \sqrt{69} < 9$$
$$\boxed{\text{between 8 \& 9}}$$

14. $-\sqrt{144} = \boxed{-12}$

15. $\sqrt{169} = \boxed{13}$

2. $\sqrt{64} = \boxed{8}$

4. $\sqrt{24}$ $4 \cdot 4 = 16$ $5 \cdot 5 = 25$
   $\sqrt{16} < \sqrt{24} < \sqrt{25}$
   $4 < \sqrt{24} < 5$
   $\boxed{\text{between 4 } \& \text{ 5}}$

6. $\sqrt{0} = \boxed{0}$

8. $\sqrt{13}$ $3 \cdot 3 = 9$ $4 \cdot 4 = 16$
   $\sqrt{9} < \sqrt{13} < \sqrt{16}$
   $3 < \sqrt{13} < 4$
   $\boxed{\text{between 3 } \& \text{ 4}}$

10. $\sqrt{9} = \boxed{3}$

12. $\sqrt{48}$ $6 \cdot 6 = 36$ $7 \cdot 7 = 49$
    $\sqrt{36} < \sqrt{48} < \sqrt{49}$
    $6 < \sqrt{48} < 7$
    $\boxed{\text{between 6 } \& \text{ 7}}$

14. $\sqrt{8^2} = \sqrt{64} = \boxed{8}$
    *Please note: the square root of any number squared is that #!
    $\sqrt{x^2} = x$ $\sqrt{4^2} = 4$ $\sqrt{36^2} = 36$

16. $\sqrt{25} + \sqrt{16} =$
    $5 + 4 = \boxed{9}$

18. $\sqrt{144} + \sqrt{25} =$
    $12 + 5 = \boxed{17}$

19. $\sqrt{79 - 61} = \sqrt{18}$ $4 \cdot 4 = 16$ $5 \cdot 5 = 25$
    $\sqrt{16} < \sqrt{18} < \sqrt{25}$
    $4 < \sqrt{18} < 5$
    $\boxed{\text{between 4 } \& \text{ 5}}$

20. $-\sqrt{66 - 2} = -\sqrt{64} = \boxed{-8}$

22. $\sqrt{9} + \sqrt{16} \underline{\quad} \sqrt{9 + 16}$
    $3 + 4 \underline{\quad} \sqrt{25}$
    $7 \geq 5$

24. $\sqrt{16} - \sqrt{9} \underline{\quad} \sqrt{16 - 9}$
    $4 - 3 \underline{\quad} \sqrt{7}$ $2 \cdot 2 = 4$ $3 \cdot 3 = 9$
    $1 \leq \sqrt{7}$ $\sqrt{4} < \sqrt{7} < \sqrt{9}$
    $2 < \sqrt{7} < 3$

26. $\sqrt{4} \times \sqrt{9} \underline{\quad} \sqrt{4 \times 9}$
    $2 \times 3 \underline{\quad} \sqrt{36}$
    $6 = 6$

28. $2\sqrt{2} \underline{\quad} \sqrt{2 \times 2}$ $1 \cdot 1 = 1$ $2 \cdot 2 = 4$
    $2\sqrt{2} \underline{\quad} \sqrt{4}$ $\sqrt{1} < \sqrt{2} < \sqrt{4}$
    $2\sqrt{2} \geq 2$ $1 < \sqrt{2} < 2$
    Two times a number greater than 1 is greater than 2!

30. $\left(\sqrt{25}\right)^2 = \boxed{25}$

32. $\left(\sqrt{49}\right)^2 = \boxed{49}$
    *Please note:
    The square root of any number, squared, is that #!

    $\left(\sqrt{x}\right)^2 = x$
    $\left(\sqrt{36}\right)^2 = 36$
    $\left(\sqrt{12}\right)^2 = 12$

1. $10 \times 10 =$ $\boxed{100 \text{ sq. units}}$

2. $13 \times 13 =$ $\boxed{169 \text{ sq. units}}$

3. $6^2 \underline{\quad} 4^2 + 5^2$
   $36 \underline{\quad} 16 + 25$
   $\boxed{36 \neq 41}$

4. $5^2 \underline{\quad} 3^2 + 4^2$
   $25 \underline{\quad} 9 + 16$
   $\boxed{25 = 25}$

5. $10^2 \underline{\quad} 6^2 + 8^2$
   $100 \underline{\quad} 36 + 64$
   $\boxed{100 = 100}$

6. $3, 4, 5$

   $3^2 + 4^2 \bigcirc 5^2$
   $9 + 16 \bigcirc 25$
   $25 = 25$
   $\boxed{\text{yes!}}$

7. $7, 24, 25$

   $7^2 + 24^2 \bigcirc 25^2$ 24 576
   $49 + 576 \bigcirc 625$ $\times 24$ $+49$
   $625 = 625$ $\overline{96}$ $\overline{625}$
   $\boxed{\text{yes}}$ 400
                            $\overline{576}$

8. $5, 10, 12$

   $5^2 + 10^2 \bigcirc 12^2$
   $25 + 100 \bigcirc 144$
   $125 \neq 144$
   $\boxed{\text{no}}$
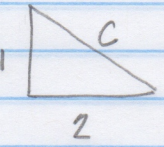
9. $10, 24, 26$ $\overset{3}{26}$
                                     $\times 26$
   $10^2 + 24^2 \bigcirc 26^2$ $\overline{156}$
   $100 + 576 \quad\quad 676$ 520
   $\quad 676 = 676$ $\overline{676}$
   $\boxed{\text{yes}}$

2. $5^2 + 12^2 =$
$25 + 144 = \boxed{169 \text{ sq. units}}$

4. 6, 8, 10

$6^2 + 8^2 \bigcirc 10^2$
$36 + 64 \quad 100$
$100 = 100$
$\boxed{\text{yes}}$
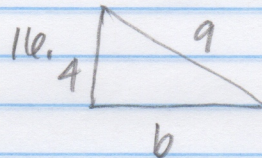
6. 16 cm, 30 cm, 34 cm

$16^2 + 30^2 \bigcirc 34^2$
$256 + 900 \quad 1156$
$1156 = 1156$
$\boxed{\text{yes}}$

$\begin{array}{r} \overset{3}{16} \\ \times 16 \\ \hline 96 \\ 160 \\ \hline 256 \end{array} \quad \begin{array}{r} \overset{1}{34} \\ \times 34 \\ \hline 136 \\ 1020 \\ \hline 1156 \end{array}$

8. 1.5 mm 2.0 mm 2.5 mm

$(1.5)^2 + (2)^2 \bigcirc (2.5)^2$
$2.25 + 4 \quad 6.25$
$6.25 = 6.25$
$\boxed{\text{yes}}$

$\begin{array}{r} 1.5 \\ \times 1.5 \\ \hline 75 \\ 150 \\ \hline 2.25 \end{array}$

10. 9 m, 21 m, 23 m

$9^2 + 21^2 \bigcirc 23^2$
$81 + 441 \quad 529$
$522 \neq 529$
$\boxed{\text{no}}$

$\begin{array}{r} 21 \\ \times 21 \\ \hline 21 \\ 420 \\ \hline 441 \end{array} \quad \begin{array}{r} 23 \\ \times 23 \\ \hline 69 \\ 460 \\ \hline 529 \end{array}$

12. 9 km, 40 km, 41 km

$9^2 + 40^2 \bigcirc 41^2$
$81 + 1600 \quad 1681$
$1681 = 1681$
$\boxed{\text{yes}}$

$\begin{array}{r} 41 \\ \times 41 \\ \hline 41 \\ 1640 \\ \hline 1681 \end{array}$

14.
$2^2 + 1^2 = c^2$
$4 + 1 = c^2$
$5 = c^2$
$c = \sqrt{5}$
$\boxed{c = 2.24}$
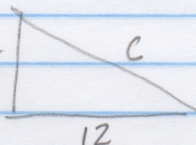
16.
$4^2 + b^2 = 9^2$
$16 + b^2 = 81$
$\quad -16 \qquad -16$
$b^2 = 65$
$b = \sqrt{65} = \boxed{8.06}$

18.
$5^2 + 12^2 = c^2$
$25 + 144 = c^2$
$169 = c^2$
$c = \sqrt{169} = \boxed{13}$

22. m = 5, n = 1
$a = m^2 - n^2 = 5^2 - 1^2 = 25 - 1 = \boxed{24}$
$b = 2 \cdot m \cdot n = 2 \cdot 5 \cdot 1 = \boxed{10}$
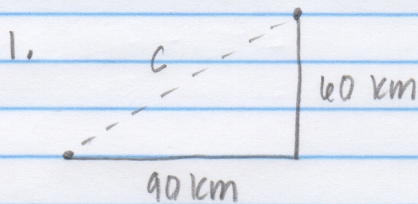$c = m^2 + n^2 = 5^2 + 1^2 = 25 + 1 = \boxed{26}$

24. m = 4, n = 2
$a = m^2 - n^2 = 4^2 - 2^2 = 16 - 4 = \boxed{12}$
$b = 2 \cdot m \cdot n = 2 \cdot 4 \cdot 2 = \boxed{16}$
$c = m^2 + n^2 = 4^2 + 2^2 = 16 + 4 = \boxed{20}$
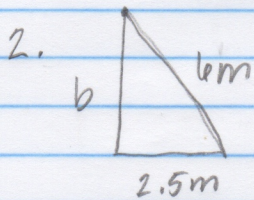
1.

60 km
90 km

$90^2 + 60^2 = c^2$
$8100 + 3600 = c^2$
$11700 = c^2$
$c = \sqrt{11700} = \boxed{108.2\ cm}$
Use a calculator!

2.

b   6m
2.5m

$(2.5)^2 + b^2 = 6^2$
$6.25 + b^2 = 36.00$
$\quad -6.25 \qquad -6.25$
$\qquad b^2 = 29.75$
$\qquad b = \sqrt{29.75}$
$\boxed{b = 5.5\ m}$

3.

40   25   35
a   a
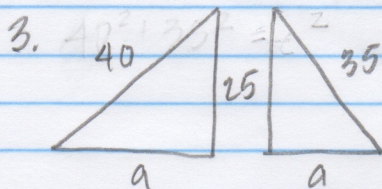
$\begin{array}{r} 35 \\ \times 35 \\ \hline 175 \\ 1050 \\ \hline 1225 \end{array}$

$a^2 + 25^2 = 40^2$ $a^2 + 25^2 = 35^2$
$a^2 + 625 = 1600$ $a^2 + 625 = 1225$
$\quad -625 \quad -625$ $\quad -625 \quad -625$
$\qquad a^2 = 975$ $\qquad a^2 = 600$
$a = \sqrt{975} = 31.2$ $a = \sqrt{600} = 24.5$
$31.2 + 24.5 = \boxed{55.7\ m}$

4.

10
10
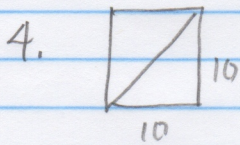
$10^2 + 10^2 = c^2$
$100 + 100 = c^2$
$200 = c^2$
$c = \sqrt{200} = \boxed{14.1\ cm}$

5.

10   b   a = b
a
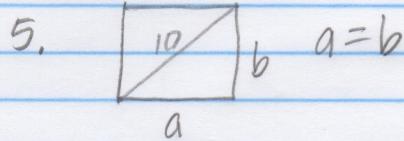
$a^2 + b^2 = 10^2$
$a^2 + a^2 = 10^2$
$\dfrac{2a^2}{2} = \dfrac{100}{2}$
$a^2 = 50 \quad a = \sqrt{50} = \boxed{7.1\ cm}$

6.

12   9   6
18   c

$6^2 + 9^2 = c^2$ 81
$36 + 81 = c^2$ $+36$
$117 = c^2$ 117
$c = \sqrt{117} = \boxed{10.8\ m}$