Answers
for Grade 9 Group Assignments - Quarter #3

<u>Notes:</u>
- Answers for group assignment problems that are out of the workbook can be found in the "G9 Workbook Answer Key".
- This answer key doesn't include all answers.

Grade 9 – Week #17

No answers needed

Grade 9 – Week #18

Individual Work – Challenge Problem:

F is Frodo's age now, and **$** is Sam's age now.

F+3 is Frodo's age 3 years from now, and **$+3** is Sam's age 3 years from now.

Translating the two sentences into algebraic equations gives us:
- "Frodo's age is 8 years less than three times Sam's age" → **F = 3$ – 8**
- "Three years from now, Frodo's age will be twice Sam's age" can be rewritten as: "Frodo's age three years from now, will be twice Sam's age three years from now" → **F+3 = 2($+3)**

If we take the second equation and substitute for F what the first equation tells us, we get: **(3$ – 8) + 3 = 2($+3)** And solving this equation, gives us **$ = 11.**

Frodo is 25 years old, and Sam is 11.

Grade 9 – Week #19

Puzzle problem

Grade 9 – Week #20

Puzzle problem

<u>Method using algebra</u>:
(1) WX=12; (2) $^Y/_Z = 5$; (3) WY=30; (4) XZ=4

Subbing #1, we get: $(\frac{12}{X})(5Z) = 30 \rightarrow 2Z = X$, and

subbing this into #4, gives us $Z = \sqrt{2}$. The rest follows.

<u>Method using hint</u>:
We square the given problem and instead solve for this: It is then easiest to use trial and error with the right-most two boxes. These two boxes can only be possibly filled with: 2, 8; 8, 2; 16, 1; 1, 16; or 4, 4. We eventually see that the four boxes must be filled with 18, 8, 50, 2. Therefore, the original boxes must be as given above.

Answer:

Grade 9 – Week #21

For Tuesday:

    1) $\approx 6.40 \times 10^{15}$, which is 6,400,000,000,000,000

    2) 150

For Thursday:

    3) 17,576,000

    4) If students = 13, 13!=6,227,020,800 $t \approx 197$ years.

        If students = 18, $18! \approx 6.40 \cdot 10^{15}$ $t \approx 203,000,000$ years

        If students = 25, $25! \approx 1.55 \cdot 10^{25}$ $t \approx 492,000,000,000,000,000$ years

Grade 9 – Week #22

For Tuesday:

    6) a) 60   b) 10   c) 6

    7) $_nC_r = \dfrac{_nP_r}{r!} = \dfrac{n!}{(n-r)!\,r!}$

Grade 9 – Week #23

For Tuesday:

    2) a) 120   b) 60   c) 20   d) $\dfrac{10!}{3!\,2!\,2!} = 151,200$ e) $\dfrac{14!}{5!\,2!\,2!} = 181,621,440$
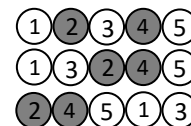
    3) $\dfrac{3}{216} \approx 1.39\%$

For Thursday:

    4) 5x10x3 = 150   5) $10^4 = 10,000$ 6) $_{10}P_4 = 5040$ 7) $_{10}C_4 = 210$

    8) $\dfrac{12!}{4!\,3!\,5!} = 27,720$ 9) 30%   10) 0.06 = 6%   11) $\approx 1.29\%$ 12) 3003

Grade 9 – Week #24

For Thursday:

    1) This can be done in two moves, assuming that "switching" is allowed (as shown here on the right) in the first move:

    2) In this case, we are dealing with three series:

        Multiples of three: $3 + 6 + 9 + ... + 999$; sum (Σ) = 166833

        Multiples of five: $5 + 10 + 15 + ... + 1000$; $\Sigma = 100500$

        Multiples of fifteen: $15 + 30 + 45 + ... + 990$; $\Sigma = 33165$

        To get our answer we add the number of multiples of three to the number of multiples of five. However, we have just counted some of the numbers (the multiples of 15) twice. So we subtract the number of multiples of 15.

        166833 + 100500 – 33165 = <u>234,168</u>.