

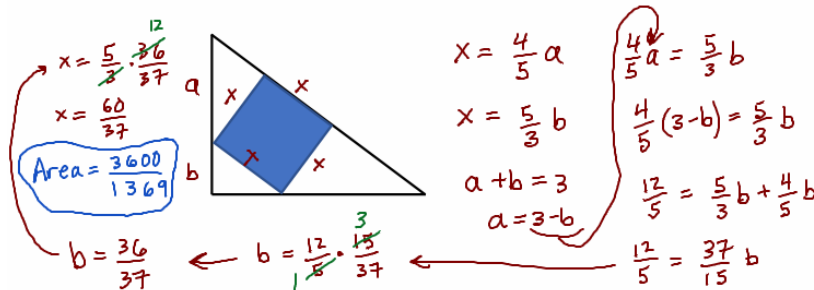
Answers for Grade 10 Group Assignments - Quarter #4

Notes:

- Answers for group assignment problems that are out of the workbook can be found in the file titled "G10 Answers...".
- This answer key doesn't include all answers.

Week 25

- *Puzzle.*



Week 26

- *The Two-Door Riddle.*

The question Ben should ask one of the guards is, "If I ask the other guard which door will lead to my freedom, what will he say?" No matter which guard he asks, the answer given will be the wrong door, so he should open the other door.

Week 27

Answers for Tuesday: 1) 16.05% 2) 34.7% 3) 342% 4) In the year 1554

Week 28

- No answers needed.

Week 29

for Tuesday:

- 1) A = 25; G = 15; H = 9
- 2) A = 25; G = 24.92; H = 24.84
- 3) a) Arithmetic b) 33, 40, 47 and -16, -9, -2 c) $X_n = X_{n-1} + 7$ d) $X_n = 5 + 7n$ e) 285 f) arithmetic
- 4) a) Geometric b) $\approx 195.3, 244.1, 305.2$ and $40.96, 51.2, 64$ c) $X_n = 1.25 \cdot X_{n-1}$
d) $X_n = 80 \cdot 1.25^n$ e) ≈ 1455.2285 f) Geometric
- 5) a) Harmonic b) 600 c) $X_4 = 1200, X_5 = \infty, X_{10} = -240, X_{-1} = 200, X_{-2} \approx 171.4$

for Thursday:

- 2) a) *Triangular Numbers:* 1, 3, 6, 10, 15, 21, 28, 36...
b) *The Square Numbers:* 1, 4, 9, 16, 25, 36, 49, 64...
c) *The Pentagonal Numbers:* 1, 5, 12, 22, 35, 41, 60, 82...
d) *The Hexagonal Numbers:* 1, 6, 15, 28, 45, 66, 91, 120...

Week 30

Individual Work:

- 1) 253 2) 7668 3) 210 4) $1404-156=1248$ 5) 5,230,176,601 6) 6,725,601
7) 11,111,111 8) ≈ 1.99976 9) 2 10) $1\frac{1}{2}$ 11) $10/9$ 12) 4 13) $8/5$
14) 1 15) 2 16) $\frac{1}{2}$ 17) $7/4$ 18) $1\frac{1}{2}$ 19) ∞ (doesn't converge)

for Tuesday:

- 1) 666 2) 3330 3) 108 4) 3438
5) $a\binom{n}{2}(n+1)$ 6) $\binom{n}{2}(n+1)+bn$ 7) $a\binom{n}{2}(n+1)+bn$
8) x^2-1 9) x^3-1 10) x^4-1 11) x^7-1 12) $x^{13}-1$ 13) x^7-1
14) $x^{23}-1$ 15) $x^{n+1}-1$ 16) $\sum_{i=0}^n x^i = \frac{x^{n+1}}{x-1}$ 17) 1093 20) 1093 21) 11,111,111,111,111
22) $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\dots=2$ 38) If the base (x) is greater than 1, then the value diverges as the exponent gets larger. If the base is between 0 and 1, the value approaches zero as the exponent increases.
39) x^{n+1} becomes zero 40) $\sum_{i=0}^{\infty} x^i = \frac{1}{1-x}$

Week 31 No answers needed.

Week 32

for Thursday:

- 4) $\sqrt[12]{2} \approx 1.05946 : 1$
5) $(\sqrt[12]{2})^7 \approx 1.4983 : 1$
6) $27.5 \cdot 2^7 = 3520 \text{ Hz}$
7) $27.5 \cdot [(\sqrt[12]{2})^7]^{12} = 3520 \text{ Hz}$
8) a) $293.66 = 98 (\sqrt[12]{2})^n \rightarrow \frac{293.66}{98} = 2^{(n/12)} \rightarrow \log_2\left(\frac{293.66}{98}\right) = \frac{n}{12} \rightarrow n = 19$ b) 20 c) 70
9) a) F b) A[#]/B^b c) C[#]/D^b d) B

Harmonic Worksheet:

Note: D' means one octave above D; D'' means two octaves above D, etc.

- | | |
|--------|----------------------|
| 1) D | 10) A' |
| 2) D | 11) F [#] |
| 3) G | 12) F ^{#''} |
| 4) D'' | 13) B |
| 5) D'' | 14) F ^{#''} |
| 6) D'' | 15) F ^{#'} |
| 7) A | 16) F ^{#''} |
| 8) A' | 17) F ^{#''} |
| 9) A' | 18) F ^{#''} |