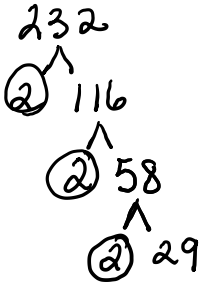
Midterm Flashback #1

Answer Key

1. Write the prime factorization of 232. Is it a perfect square or cube? How do you know?



$232 = 2^3 \cdot 29^1$

Neither square or cube

- if it was a square all primes would have even exponents
- if it was a cube, all primes would be a multiple of 3

2. Determine the GCF of 60 and 105.

2 | 60	3 | 105
2 | 30	5 | 35
3 | 15	7 | 7
5 | 5	1
1	

$60 = 2^2 \cdot 3^1 \cdot 5^1 \cdot 7^0$

$105 = 2^0 \cdot 3^1 \cdot 5^1 \cdot 7^1$

$\therefore GCF = 2^0 \cdot 3^1 \cdot 5^1 \cdot 7^0$

$= 15$

3. Evaluate $-(3+5)^0$

B
~~E~~
DM
AS

$-(8)^0$

-1

Note: the base for the exponent is 8

Not -8 because the minus sign is out infront of the bracket

4. Simplify: $6x^2(-3x^8)\left(\frac{1}{2}x^1\right)$

Multiplication Law → add exponents
* coefficient multiply

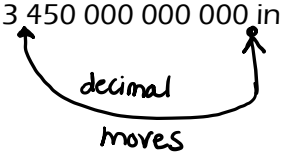
$6 \cdot -3 \cdot \frac{1}{2} \quad x^2 \cdot x^8 \cdot x^1$

$-9 \, x^{2+8+1}$

$-9x^{11}$

5. Evaluate $\left(\frac{2}{3}\right)^{-3}$ → Power of a power → $\left(\frac{2^1}{3^1}\right)^{-3}$ → $\frac{2^{-3}}{3^{-3}}$ → Negative exponent Law → $\frac{3^3}{2^3}$ → Evaluate $\frac{3 \cdot 3 \cdot 3}{2 \cdot 2 \cdot 2}$ → $\frac{27}{8}$

6. Write 3 450 000 000 000 in scientific notation



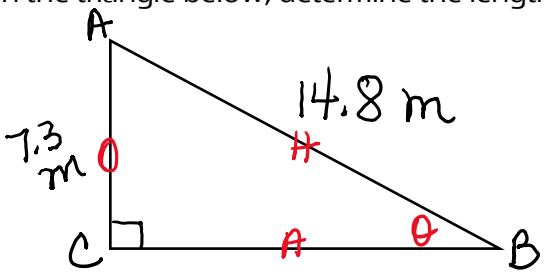
3.45×10^{12}

12 → exponent → positive because original number is BIG

10 ← base

coefficient always between 1–10

7. Given the triangle below, determine the length of AB and angle B.



SOH CAH TOA

$\sin\theta = 7.3/14.8$

$\theta = \sin^{-1}(7.3/14.8)$

$\theta \doteq 30°$

14.8m → Boring! Lets find CB

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

$a^2 + 7.3^2 = 14.8^2$

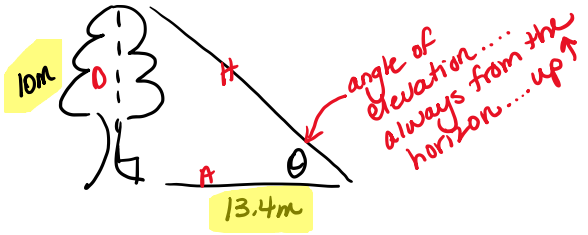
$a^2 + 53.29 = 219.04$

$-53.29 \quad -53.29$

$\sqrt{a^2} = \sqrt{165.75}$

$a \doteq 12.9\ m$

8. If a 10 metre tree casts a 13.4 metre shadow, what is the angle of elevation of the sun?



SOH CAH TOA

$\tan\theta = \frac{10}{13.4}$

$\theta = \tan^{-1}(10/13.4)$

$\theta \doteq 37°$

9. Simplify: $(5x^2 - 3x) + 2(10 - 4x) - (7x^2 + x - 5)$

$5x^2 - 3x + 20 - 8x - 7x^2 - x + 5$

$-2x^2 - 12x + 25$

10. Expand and simplify $(3x - 4)^2$

multiply distribute

add like terms

$(3x-4)(3x-4)$

$9x^2 - 12x - 12x + 16$

$9x^2 - 24x + 16$