# What do you Remember from Math 10?

Name: _____

No calculator. Show your work.

1. Did you write your name on the top-right corner of this page AND in the ZipGrade name box?
   A. Yes
   B. No

2. Simplify $a(a^3)(a^4)$. The answer is $a^k$. Find the exponent $k$ only.
   A. 7
   B. 12
   C. 8
   D. 9
   E. 10
   F. 11
   G. None of these

3. Simplify $(3x^3y^5)^2$
   A. $3x^5y^7$
   B. $3x^6y^{10}$
   C. $6x^5y^7$
   D. $6x^6y^{10}$
   E. $9x^5y^7$
   F. $9x^6y^{10}$
   G. None of these

4. Evaluate $3(-3)^{-2}$
   A. $1/81$
   B. $1/3$
   C. 27
   D. $1/9$
   E. 9
   F. 3
   G. None of these

5. Simplify $\left(\frac{x}{x^{-3}}\right)^2$. The answer is $x^k$. Find the exponent $k$ only.
   A. $-1$
   B. $-6$
   C. 6
   D. 7
   E. 8
   F. $-8$
   G. None of these

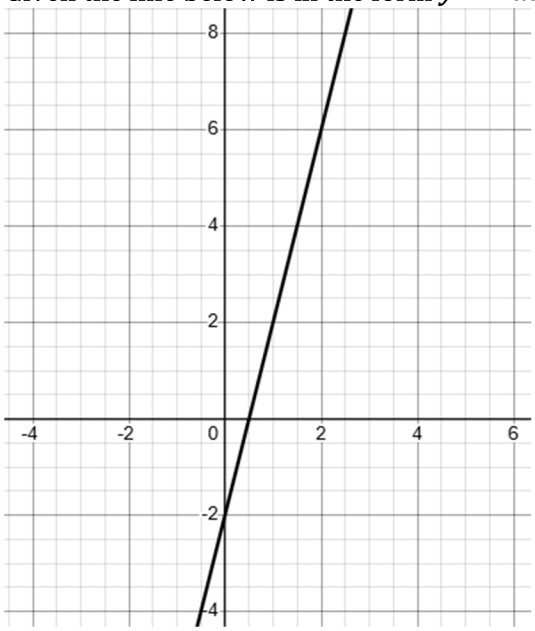
6. Find the prime factorization of 26950
   A. $2 \times 5^2 \times 7^2 \times 11$
   B. $2 \times 5 \times 7 \times 11^2$
   C. $2^2 \times 5 \times 7 \times 11$
   D. $2^3 \times 5 \times 7 \times 11$
   E. $2 \times 5^3 \times 7 \times 11$
   F. $2^4 \times 5^2 \times 7 \times 11$
   G. None of these

7. Find the GCF of the numbers 12 and 40
   A. $2$
   B. $4$
   C. $8$
   D. $60$
   E. $120$
   F. $240$
   G. None of these

8. Find the LCM of the numbers 12 and 40
   A. $2$
   B. $4$
   C. $8$
   D. $60$
   E. $120$
   F. $240$
   G. None of these

9. $f(x) = 3x - 1$. Evaluate $f(7)$
   A. $-1$
   B. $8/3$
   C. $2$
   D. $10$
   E. $20$
   F. $21$
   G. None of these

10. Given the line below is in the form $y = mx + b$, find the value of the slope $m$ only.

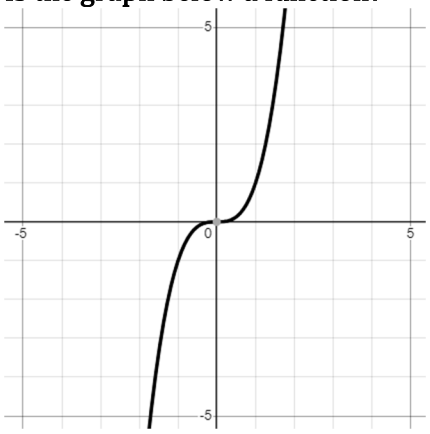



A. $2$
B. $-2$
C. $6$
D. $8$
E. $4$
F. $3$
G. None of these

11. $3x - y = 1$. Find the value of the $x$-intercept.

A. $3$
B. $-3$
C. $4$
D. $-1$
E. $1$
F. $1/3$
G. None of these

12. Is the graph below a function?




A. Yes
B. No

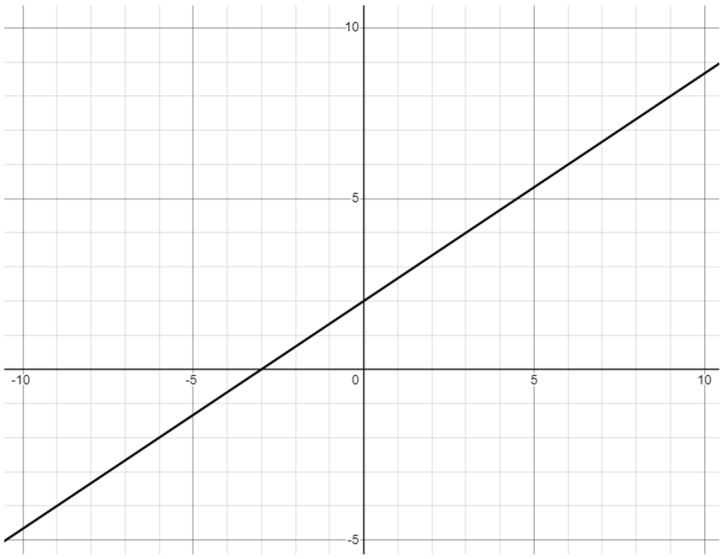
13. What is the slope of the line $x = 0$?

A. $0$
B. $1$
C. $y$
D. $\pi$
E. $\theta$
F. $1/2$
G. Undefined

14. What is the slope of the line $y = 2.5$?

A. $0$
B. $1$
C. $x$
D. $5/2$
E. $\theta$
F. $\tan^{-1}(2.5)$
G. Undefined

15. Which of the following are true about the graph $y = f(x)$ below?
Choose MORE than one answer.




A. The y-intercept is $-3$
B. The slope is $\frac{1}{2}$
C. The line can be described as $y - 0 = \frac{2}{3}(x + 3)$
D. This line goes through the Quadrant IV
E. The line can be described as $y - 10 = \frac{2}{3}(x - 12)$
F. The line can be described as $y = -\frac{2}{3}x + 2$

16. $f(x) = -\frac{2}{3}x + 1$. $g(x)$ is the equation of a line that goes through the point $(3, -1)$ and is perpendicular to the line $y = f(x)$. Given $g(x) = mx + b$. Find the value of $b$ only – also known as the y-intercept of $g(x)$.

A. $2/3$
B. $3/2$
C. $-3/2$
D. $5/2$
E. $-5/2$
F. $-11/2$
G. None of these

17. A line contains points $(1, -2)$ and $(3, -6)$. Find the equation of this line in general form: $Ax + By + C = 0$ where $A > 0$.
    A. $x + 2y = 0$
    B. $2x + y = 0$
    C. $x - 2y = 0$
    D. $2x - y = 0$
    E. $x + 3y = 0$
    F. $3x + y = 0$
    G. None of these

18. The pattern $-6, 2, 10, 18 \ldots$ can be modelled by the equation $f(x) = mx + b$. Find the slope $m$.
    A. $-6$
    B. $6$
    C. $8$
    D. $-8$
    E. $14$
    F. $-14$
    G. None of these

19. The pattern $-6, 2, 10, 18 \ldots$ can be modelled by the equation $f(x) = mx + b$. Find the value of the $50^{th}$ term.
    A. $346$
    B. $364$
    C. $368$
    D. $382$
    E. $386$
    F. $390$
    G. None of these

20. Expand $(x-4)(x+6)$ in the form $ax^2+bx+c$. Find the coefficient of the $x$ term only, the $b$-value.
    A. $2$
    B. $-2$
    C. $-10$
    D. $10$
    E. $24$
    F. $-24$
    G. None of these

21. Expand and simplify $-2(1-2x)(x+4)$ in the expanded form $ax^2+bx+c$. Now find the constant $c$ only.
    A. $4$
    B. $-4$
    C. $8$
    D. $-8$
    E. $6$
    F. $-6$
    G. None of these

22. Expand and simplify $(x-2)(x^2+2x-3)$. Write in the form $ax^3+bx^2+cx+d$. Now find $c$ only, the coefficient of the $x$ term.
    A. $6$
    B. $-6$
    C. $5$
    D. $-5$
    E. $7$
    F. $-7$
    G. None of these

23. Find the GCF of $10a^2bc^3+15a^3b^4c^2-20ab^3c^5$
    A. $60a^3b^4c^5$
    B. $60abc^2$
    C. $10a^2bc^2$
    D. $5abc^2$
    E. $5a^3b^4c^5$
    F. $60a^6b^8c^{10}$
    G. None of these

24. Factor $x^2 + 4x - 96$. Which of the following are one of the factors?

A. $(x + 4)$
B. $(x - 4)$
C. $(x + 8)$
D. $(x - 8)$
E. $(x + 2)$
F. $(x - 2)$
G. None of these

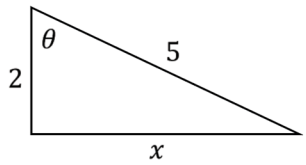
25. Factor $3x^2 + 8x - 16$. Which of the following are one of the factors?

A. $(x - 2)$
B. $(x + 2)$
C. $(x + 4)$
D. $(x - 4)$
E. $(x + 8)$
F. $(x - 8)$
G. None of these

26. When fully factoring $a^2(b^2 - 9) - (b^2 - 9)$ how many unique factors do we have?

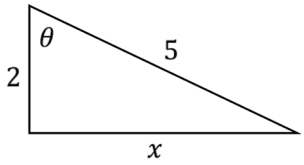
A. 1
B. 2
C. 3
D. 4
E. 5
F. 6
G. None of these

27. See triangle below. Find $x$.



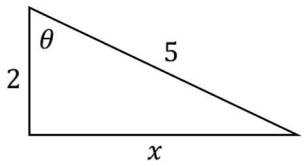

A. 7
B. 10
C. $\sqrt{10}$
D. $\sqrt{15}$
E. $\sqrt{21}$
F. $\sqrt{29}$
G. None of these

28. See triangle below. Find $\cos\theta$.



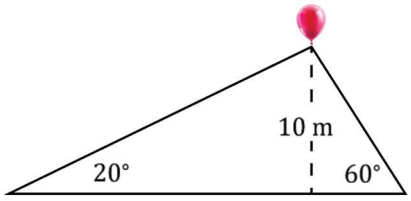

A. $x/2$
B. $x/5$
C. $2/5$
D. $5/2$
E. $\cos^{-1}\left(\frac{5}{2}\right)$
F. $\cos^{-1}\left(\frac{2}{5}\right)$
G. None of these

29. See triangle below. Find the correct expression for $\theta$ without using your calculator.




A. $\cos^{-1}\left(\frac{5}{2}\right)$
B. $\sin^{-1}\left(\frac{\sqrt{21}}{5}\right)$
C. $\tan^{-1}\left(\frac{2}{5}\right)$
D. $\tan^{-1}\left(\frac{5}{2}\right)$
E. $\tan^{-1}\left(\frac{\sqrt{15}}{2}\right)$
F. $\tan^{-1}\left(\frac{\sqrt{29}}{2}\right)$
G. None of these

30. See diagram below:




Person $A$ looks up at a balloon with an angle of elevation of $20°$.
Person $B$ looks up at a balloon with an angle of elevation of $60°$.
If the balloon is 10 m high, how far apart are these people?

A. $\frac{10}{\tan 20°}+\frac{10}{\tan 60°}$
B. $\tan 20° + \tan 60°$
C. $\frac{10}{\tan 80°}$
D. $\frac{10}{\sin 20°}+\frac{10}{\sin 60°}$
E. $\frac{\tan 80°}{10}$
F. $\frac{10}{\cos 20°}+\frac{10}{\cos 60°}$
G. None of these

31. Suppose your gross annual income is $60,000.
    If you are taxed at 28% calculate your net pay.
    A. $\$16\,800$
    B. $\$42\,300$
    C. $\$42\,400$
    D. $\$43\,200$
    E. $\$43\,400$
    F. $\$44\,200$
    G. None of these

32. Find the $y$-value only of the point of intersection: $\begin{cases} 4x - 2y = 3 \\ 3x + 4y - 16 = 0 \end{cases}$
    A. $1$
    B. $-1$
    C. $1.5$
    D. $-1.5$
    E. $2$
    F. $2.5$
    G. None of these

33. Flying to Vancouver with a tailwind, a plane averaged 158 km/h. On the return trip the plane only averaged 112 km/h while flying back into the same wind. Find the speed of the plane in still air only.
    A. $32$
    B. $23$
    C. $125$
    D. $105$
    E. $135$
    F. $140$
    G. None of these