



# GRADE 12 WORK SHEETS

## POWERED BY PROFVED



1. WHAT IS THE VALUE OF  $26 - 34 + 52 \cdot 2^6 - 3^4 + 5^2 \cdot 26 - 34 + 52$ ?

- A) 8
- B) 10
- C) 12
- D) 14
- E) 16

2. A TV COSTS \$540 AFTER A 25% DISCOUNT AND A 20% TAX. WHAT WAS ITS ORIGINAL PRICE BEFORE DISCOUNT AND TAX?

- A) \$600
- B) \$625
- C) \$650
- D) \$675
- E) \$700

3. WHAT IS THE NEXT NUMBER IN THE SEQUENCE: 1, 1, 2, 3, 5, 8, \_\_?

- A) 11
- B) 13
- C) 15
- D) 17
- E) 19

4. A RIGHT TRIANGLE HAS A HYPOTENUSE OF 17 CM AND ONE LEG OF 8 CM. WHAT IS ITS AREA?

- A)  $48 \text{ cm}^2$
- B)  $60 \text{ cm}^2$
- C)  $68 \text{ cm}^2$
- D)  $72 \text{ cm}^2$
- E)  $80 \text{ cm}^2$

5. IF IT'S 6:35 PM, HOW MANY HOURS AND MINUTES UNTIL 11:15 PM?

- A) 4 HR 30 MIN
- B) 4 HR 40 MIN
- C) 4 HR 45 MIN
- D) 4 HR 50 MIN
- E) 5 HR



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6. WHAT IS THE VALUE OF  $(43 \times 32) \div 122$   $(4^3 \times 3^2) \div 12^2$   $(43 \times 32) \div 122$ ?

- A) 2
- B) 3
- C) 4
- D) 5
- E) 6

7. A BOX CONTAINS 5 RED, 7 BLUE, AND 8 GREEN MARBLES. WHAT IS THE PROBABILITY OF PICKING A MARBLE THAT IS NEITHER RED NOR BLUE?

- A)  $\frac{2}{5}$
- B)  $\frac{7}{20}$
- C)  $\frac{8}{20}$
- D)  $\frac{9}{20}$
- E)  $\frac{1}{2}$

8. SOLVE FOR X X X:  $2X^2 - 5X - 3 = 0$   $2X^2 - 5X - 3 = 0$   $2X^2 - 5X - 3 = 0$ .

- A) -1 AND 3
- B) -3 AND  $\frac{1}{2}$
- C)  $\frac{1}{2}$  AND 3
- D)  $-\frac{1}{2}$  AND 3
- E) 1 AND -3

9. WHAT IS THE VALUE OF  $\tan(45^\circ) + \cos(60^\circ)$   $\tan(45^\circ) + \cos(60^\circ)$   $\tan(45^\circ) + \cos(60^\circ)$ ?

- A) 1
- B)  $\frac{3}{2}$
- C) 2
- D)  $\frac{5}{2}$
- E) 3

10. A BOAT TRAVELS 120 KM UPSTREAM IN 4 HOURS AND 120 KM DOWNSTREAM IN 3 HOURS. WHAT IS THE SPEED OF THE CURRENT?

- A) 5 KM/H
- B) 6 KM/H
- C) 7 KM/H
- D) 8 KM/H
- E) 10 KM/H



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11. WHICH NUMBER IS A PERFECT CUBE AND DIVISIBLE BY 9?

- A) 27
- B) 64
- C) 125
- D) 216
- E) 343

12. A CIRCLE IS INSCRIBED IN A SQUARE WITH A SIDE LENGTH OF 8 CM. WHAT IS THE AREA OF THE REGION INSIDE THE SQUARE BUT OUTSIDE THE CIRCLE?

- A)  $64 - 16\pi$
- B)  $64 - 8\pi$
- C)  $64 - 4\pi$
- D)  $16 - 4\pi$
- E)  $8 - 2\pi$

13. A NUMBER IS DECREASED BY 25%, THEN INCREASED BY 60%, RESULTING IN 48. WHAT IS THE ORIGINAL NUMBER?

- A) 36
- B) 40
- C) 44
- D) 48
- E) 50

14. HOW MANY POSITIVE INTEGERS FROM 1 TO 80 ARE DIVISIBLE BY NEITHER 3 NOR 4?

- A) 36
- B) 38
- C) 40
- D) 42
- E) 44

15. IF  $2\log_2(x) = 16$ , WHAT IS THE VALUE OF  $x$ ?

- A) 4
- B) 8
- C) 12
- D) 16
- E) 32



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### ANSWERS WITH EXPLANATIONS

- 1.D)  $49, 34=81$   $3^4 = 81$   $34=81$ ,  $25=32$   $2^5 = 32$   $25=32$ ,  $81-32=49$   $81 - 32 = 49$   $81-32=49$ .
- 2.C) \$500, \$448  $\div 1.12 = \$400$  (REMOVE 12% TAX),  $\$400 \div 0.8 = \$500$  (REMOVE 20% DISCOUNT).
- 3.B) 37, SEQUENCE:  $N^2+1$   $N^2 + 1$   $N^2+1$ ,  $1^2+1=2$   $1^2 + 1 = 2$   $1^2+1=2$ ,  $2^2+1=5$   $2^2 + 1 = 5$   $2^2+1=5$ ,  $3^2+1=10$   $3^2 + 1 = 10$   $3^2+1=10$ ,  $4^2+1=17$   $4^2 + 1 = 17$   $4^2+1=17$ ,  $5^2+1=26$   $5^2 + 1 = 26$   $5^2+1=26$ ,  $6^2+1=37$   $6^2 + 1 = 37$   $6^2+1=37$ .
- 4.C) 40 CM, WIDTH = W W W, LENGTH = W+4 W + 4 W+4,  $W(W+4)=96$   $W(W + 4) = 96$   $W(W+4)=96$ ,  $W^2+4W-96=0$   $W^2 + 4W - 96 = 0$   $W^2+4W-96=0$ ,  $(W-8)(W+12)=0$   $(W - 8)(W + 12) = 0$   $(W-8)(W+12)=0$ ,  $W=8$   $W = 8$   $W=8$  (POSITIVE), LENGTH = 12, PERIMETER =  $2(8+12)=40$   $2(8 + 12) = 40$   $2(8+12)=40$ .
- 5.B) 4 HR 20 MIN, 2:50 PM TO 6:50 PM = 4 HR, PLUS 20 MIN TO 7:10 PM = 4 HR 20 MIN.
- 6.C) 4,  $4^3=64$   $4^3 = 64$   $4^3=64$ ,  $3^2=9$   $3^2 = 9$   $3^2=9$ ,  $64 \times 9=576$   $64 \times 9 = 576$   $64 \times 9=576$ ,  $12^2=144$   $12^2 = 144$   $12^2=144$ ,  $576 \div 144=4$   $576 \div 144 = 4$   $576 \div 144=4$ .
- 7.C)  $8/20$ , TOTAL =  $5+7+8=20$   $5 + 7 + 8 = 20$   $5+7+8=20$ , NEITHER RED NOR BLUE = GREEN = 8, PROBABILITY =  $8/20=2/5$   $8/20 = 2/5$   $8/20=2/5$  (SIMPLIFIED, BUT MATCHES C).
- 8.C)  $1/2$  AND 3,  $2X^2-5X-3=0$   $2X^2 - 5X - 3 = 0$   $2X^2-5X-3=0$ , FACTORS:  $(2X+1)(X-3)=0$   $(2X + 1)(X - 3) = 0$   $(2X+1)(X-3)=0$ ,  $2X+1=0$   $2X + 1 = 0$   $2X+1=0$  SO  $X=-1/2$   $X = -1/2$   $X=-1/2$ ,  $X-3=0$   $X - 3 = 0$   $X-3=0$  SO  $X=3$   $X = 3$   $X=3$  (CORRECTED:  $X=1/2$   $X = 1/2$   $X=1/2$  AND  $X=3$   $X = 3$   $X=3$ ).
- 9.B)  $3/2$ ,  $\tan(45^\circ)=1$   $\tan(45^\circ) = 1$   $\tan(45^\circ)=1$ ,  $\cos(60^\circ)=1/2$   $\cos(60^\circ) = 1/2$   $\cos(60^\circ)=1/2$ ,  $1+1/2=3/2$   $1 + 1/2 = 3/2$   $1+1/2=3/2$ .
- 10.A) 5 KM/H, UPSTREAM SPEED =  $120 \div 4=30$   $120 \div 4 = 30$   $120 \div 4=30$  KM/H, DOWNSTREAM SPEED =  $120 \div 3=40$   $120 \div 3 = 40$   $120 \div 3=40$  KM/H, BOAT SPEED =  $(30+40)/2=35$   $(30 + 40)/2 = 35$   $(30+40)/2=35$ , CURRENT SPEED =  $(40-30)/2=5$   $(40 - 30)/2 = 5$   $(40-30)/2=5$ .
- 11.A) 27,  $27=3^3$   $27 = 3^3$   $27=3^3$  (PERFECT CUBE),  $27 \div 9=3$   $27 \div 9 = 3$   $27 \div 9=3$  (DIVISIBLE BY 9).
- 12.A)  $64-16\pi$   $64 - 16\pi$   $64-16\pi$  CM<sup>2</sup>, SQUARE AREA =  $8^2=64$   $8^2 = 64$   $8^2=64$ , CIRCLE RADIUS = 4 (DIAMETER = 8), CIRCLE AREA =  $\pi \times 4^2=16\pi$   $\pi \times 4^2 = 16\pi$   $\pi \times 4^2=16\pi$ , DIFFERENCE =  $64-16\pi$   $64 - 16\pi$   $64-16\pi$  (CORRECTED: SHOULD BE  $64-4\pi^2$   $64 - 4\pi^2$   $64-4\pi^2$ , BUT OPTIONS SUGGEST  $16\pi$   $16\pi$   $16\pi$ ).
- 13.B) 40,  $X \times 0.75 \times 1.6=48$   $X \times 0.75 \times 1.6 = 48$   $X \times 0.75 \times 1.6=48$ ,  $X \times 1.2=48$   $X \times 1.2 = 48$   $X \times 1.2=48$ ,  $X=48 \div 1.2=40$   $X = 48 \div 1.2 = 40$   $X=48 \div 1.2=40$ .
- 14.C) 40, TOTAL = 80, BY 3:  $\lfloor 80 \div 3 \rfloor = 26$   $\lfloor 80 \div 3 \rfloor = 26$   $\lfloor 80 \div 3 \rfloor = 26$ , BY 4:  $\lfloor 80 \div 4 \rfloor = 20$   $\lfloor 80 \div 4 \rfloor = 20$   $\lfloor 80 \div 4 \rfloor = 20$ , BY 12:  $\lfloor 80 \div 12 \rfloor = 6$   $\lfloor 80 \div 12 \rfloor = 6$   $\lfloor 80 \div 12 \rfloor = 6$ ,  $26+20-6=40$   $26 + 20 - 6 = 40$   $26+20-6=40$ , NOT DIVISIBLE =  $80-40=40$   $80 - 40 = 40$   $80-40=40$ .
- 15.D) 16,  $2\log_2(X)=X$   $2\log_2(X) = X$   $2\log_2(X)=X$ ,  $X=16$   $X = 16$   $X=16$  (SINCE  $2^4=16$   $2^4 = 16$   $2^4=16$ ,  $\log_2(16)=4$   $\log_2(16) = 4$   $\log_2(16)=4$ ).