ALGEBRA 2

Summer Packet 2022

Algebra 2 Name_____

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Date_____

Sample problem video can be viewed at youtu.be/Gb5NcksNjx0

Evaluate each function.

1) $w(n) = -3n^2 + 2n$; Find $w(-2)$

2) $g(x) = x^2 + 3x$; Find $g(-10)$

3) $k(n) = 4n + 5$; Find $k(-8)$

4) $p(t) = t^2 + 4t$; Find $p(2)$

5) $h(n) = n^2 - 3n$; Find $h(8)$

6) $g(x) = 4x - 5$; Find $g(-10)$

7) $h(x) = 2^x + 3$; Find $h(1)$

8) $f(x) = -5 \cdot 2^{3x}$; Find $f(2)$

Find each product.

9) $(3k - 1)(k + 2)$

10) $(8n + 6)(3n - 5)$

11) $(4n - 1)(2n - 8)$

12) $(p - 1)(5p - 4)$

Simplify each polynomial.

13) $x^2 - 5x^5 - 2 + 7x^5 + 1 + 6x^2$

14) $6x + 8x^5 - 1 + 7x - 7 + 3x^5$

15) $5x^2 - 2x^3 - 2x^4 + x^2 + 7x + 4x^4$

16) $6x + 3x^5 + 3x^4 + 2x^4 - 8x^5 + 5x$

Factor each completely.

17) $n^2 + 10n + 16$

18) $x^2 + 9x + 18$

19) $n^2 + 10n + 21$

20) $r^2 + 9r + 8$

Read each situation.
Choose the best *F*ormula, *I*dentify the information, and *P*lug in the known values.
Bonus: *S*implify and/or *S*olve to find the unknown value.

21) Kristin invests $5,441 in a savings account with a fixed annual interest rate of 8% compounded continuously. What will the account balance be after 8 years?

22) Elisa invests $5,632 in a savings account with a fixed annual interest rate of 5% compounded 3 times per year. What will the account balance be after 5 years?

23) Arjun invests $4,381 in a retirement account with a fixed annual interest rate of 8% compounded continuously. How long will it take for the account balance to reach $20,030.92?

24) Mofor invests a sum of money in a retirement account with a fixed annual interest rate of 8% compounded 2 times per year. After 15 years, the balance reaches $20,628.01. What was the amount of the initial investment?

Read the situation.
What extra information does each person need to find out?
What should they do with that information?
Write 1-3 sentences of advice to help them make their decisions.

25) Hannah wants to plan a family trip to the county fair. She knows that the county fair only accepts cash (no credit or debit cards). She's not sure how much cash to bring to the fair to pay for food and tickets for the children and adults in her family.

26) Imani wants to get herself a car for her 21st birthday. She wants to save some of the money she earns from her part-time job, but she's not sure how much money she should save each month.

27) Jaxon is planning a big dinner with 18 guests. He knows what he wants to cook, but he doesn't know how much food to buy at the grocery store. He doesn't want to waste money, but he also wants all the guests to have enough food to eat.

Number	Factor Pairs
1	1·1
2	1·2
3	1·3
4	1·4 2·2
5	1·5
6	1·6 2·3
7	1·7
8	1·8 2·4
9	1·9 3·3
10	1·10 2·5
11	1·11
12	1·12 2·6 3·4
13	1·13
14	1·14 2·7
15	1·15 3·5

Number	Factor Pairs
16	1·16 2·8 4·4
17	1·17
18	1·18 2·9 3·6
19	1·19
20	1·20 2·10 4·5
21	1·21 3·7
22	1·22 2·11
23	1·23
24	1·24 2·12 3·8 4·6
25	1·25 5·5
26	1·26 2·13

Number	Factor Pairs
27	1·27 3·9
28	1·28 2·14 4·7
29	1·29
30	1·30 2·15 3·10 5·6
31	1·31
32	1·32 2·16 4·8
33	1·33 3·11
34	1·34 2·17
35	1·35 5·7
36	1·36 2·18 3·12 4·9 6·6

37	1·37
38	1·38 2·19
39	1·39 3·13
40	1·40 2·20 4·10 5 · 8
41	1 · 41
42	1 ·42 2 ·21 3 ·14 6 ·7
43	1 ·43
44	1 ·44 2 ·22 4 ·11
45	1 ·45 3 ·15 5 ·9
46	1 ·46 2 ·23
47	1 ·47

48	1 ·48 2 ·24 3 ·16 4 ·12 6 ·8
49	1 ·49 7 ·7
50	1 ·50 2 ·25 5 ·10
51	1 ·51 3 ·17
52	1 ·52 2 ·26 4 ·13
53	1 ·53
54	1 ·54 2 ·27 3 ·18 6 ·9
55	1 ·55 5 ·11
56	1 ·56 2 ·28 4 ·14 7 ·8

57	1 · 57 3 · 19
58	1 · 58 2 · 29
59	1 ·59
60	1 ·60 2 ·30 3 ·20 4 ·15 5 ·12 6 ·10
61	1 ·61
62	1 ·62 2 ·31
63	1 ·63 3 ·21 7 ·9
64	1 ·64 2 ·32 4 ·16 8 ·8
65	1 ·65 5 ·13
66	1 ·66 2 ·33 3 ·22 6 ·11

Compound interest formulas

Finite compounding

$$A = P\left(1 + \frac{r}{n}\right)^{(n \cdot t)}$$

Continuously compounding

$$A = Pe^{(r \cdot t)}$$

A: Balance (amount after)

P: Principal (starting amount)

r: interest r (as a pure decimal)

n: compounding frequency (how often per year)

t: total time