

- 1. (1) Understand the problem.
(2) Plan, using one or more of the many strategies.
(3) Carry out the plan, using logic, arithmetic, algebra, or technology resources.
(4) Look back, checking your answer for reasonableness and considering extension problems.

- 2. (a) 100, 120, 140 Arithmetic ($d = 20$)
(b) $-500,000, 5,000,000, -50,000,000$ Geometric ($r = -10$)
(c) 36, 49, 64 Neither (sequence of squares)
(d) 61, 99, 160 Neither (a Fibonacci-related sequence)

- 3. (a) 22 (b) $4n + 2$ 4. (a) 752×83 (b) 378×25

- 5. 5,000 yd^2 6. 48 minutes

- 7. 12 ways:

\$5 bills	0	2	0	2	4	6	0	2	4	6	8	10
\$10 bills	1	0	3	2	1	0	5	4	3	2	1	0
\$20 bills	2	2	1	1	1	1	0	0	0	0	0	0

- 8. 5 months

- 9. Answers may vary. A possibility is $246 + 59$, and the least sum is 305.

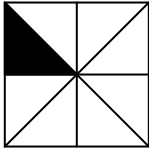
- 10. Answers may vary. A possibility is $874 + 51$, and the greatest sum is 925.

- 11. (a) 43 (b) 2,324,522,934 (c) -1 (d) 2,621,440

- 12. (a) 1,326 (b) 84 (c) 15,576 (d) 4,025

- 13. (a) 29 squares (b) 88 matchsticks

- 14. 55 squares 15. 11 posts

- 16.  17. (a) 500,500
(b) 14,950

- 18. (a) 34, 55 Fibonacci
(b) 343, 512 Cubes
(c) 56, 72 Rectangular
(d) 28, 36 Triangular

- 19. Answers will vary.

- 20. (a) 1, 1, 2; 1 (b) A, A, B, B; B 21. 103,804

22. (a) $3 \cdot 5 \neq 15$ (b) Some whales are not mammals.
 (c) For all natural numbers n , $n \leq 2$ or $n \geq 6$. (d) Some dogs do have fleas.

23. (a) Negation

p	$\sim p$
T	F
F	T

- (b) And statements (Conjunctions)

p	q	p and q
T	T	T
T	F	F
F	T	F
F	F	F

- (c) Or statements (Disjunctions)

p	q	p or q
T	T	T
T	F	T
F	T	T
F	F	F

- (d) If . . . then statements (Conditionals)

p	q	If p, then q
T	T	T
T	F	F
F	T	T
F	F	T

24. Converse: If q , then p . If they come, then you build it.
 Inverse: If not p , then not q . If you don't build it, then they won't come.
 Contrapositive: If not q , then not p . If they don't come, then you didn't build it.

25. (a) False (b) True (c) True (d) True

26. (a) If I study for the tests, then I will graduate. (This is a chain of conditionals.)

- (b) Jackie takes FIRE 1000. (This is modus ponens or the law of detachment.)

27. (a) $q \wedge (\sim r)$ (b) $r \vee (\sim q)$ (c) $\sim (q \wedge r)$

28. (a) No (b) Valid
29. \notin 30. \in
31. $\{1, 2\} \subset \{1, 2, 3, 4, 5, 6, 7\}$
32. \subset or \subseteq
33. Answers may vary.
(a) $\{1, 9, 25, \dots\}$ (b) $\{1, 3, 5, \dots\}$ (c) $\{1, 2, 4, \dots\}$ (d) $\{2, 6, 8, \dots\}$
34. Answers may vary.
(a) $B - A$ (b) $A \cap B$ (c) $A \cup B$
35. 24 members
36. (a) 4, 6, 7 (b) 6, 7 (c) 1, 4, 8 (d) 1, 4, 5, 6, 7, 8
37. 720 ways
38. 16 subsets
39. 12 color schemes
40. (a) $\{(1, a), (1, b), (1, c), (2, a), (2, b), (2, c), (3, a), (3, b), (3, c), (4, a), (4, b), (4, c)\}$
(b) 4; 3; 12
41. Answers will vary.

Do your best! Rise to the challenge! Live and learn!