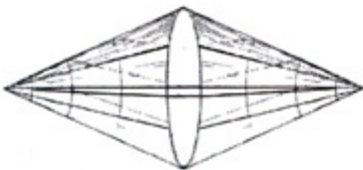
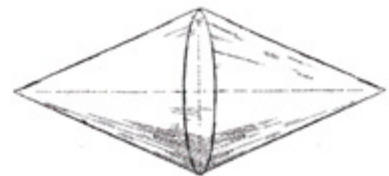
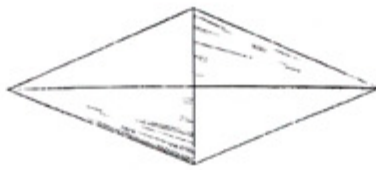
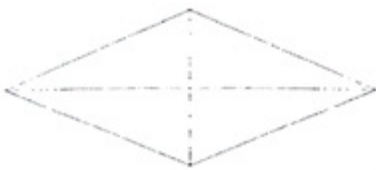


Test and Quiz Packet

INTERMEDIATE LOGIC

Mastering Propositional Arguments



INTERMEDIATE LOGIC

Mastering Propositional Arguments

TEST and QUIZ PACKET: THIRD EDITION

Canon Logic Series



INTERMEDIATE LOGIC | QUIZ 1

Lessons 1–2 (25 points)

Name _____

1. How does *propositional logic* differ from *categorical logic*? (3) _____

2. What is a *proposition*? (1) _____

3. What does it mean that a proposition is *truth functional*? (2) _____

4. Give an example of a proposition that is *not* truth functional. (2)

5. Give an example of a *simple* proposition. (2)

Problems 6-12: Given: **V** means *You eat your veggies.*
 M means *You eat your meat.*
 D means *You get dessert.*

Translate the following symbolic propositions into words.

6. $\sim V$ (1) _____

7. $M \vee \sim D$ (2) _____

8. $\sim (V \bullet M)$ (2) _____

Translate the following propositions into symbols.

9. You eat neither your veggies nor your meat. (2) _____

10. You eat your veggies but you do not get dessert. (2) _____

11. You eat your meat or your veggies, but you don't eat both. (3) _____

12. Are the letters **V**, **M**, and **D** used above *constants* or *variables*? Explain how you know. (3)

INTERMEDIATE LOGIC | QUIZ 2

Lessons 3-4 (18 points)

Name _____

1. Complete the truth table for the conditional logical operator (2):

p	q	$p \supset q$
T	T	
T	F	
F	T	
F	F	

Problems 2-7: Given the following: **K** means *The knight attacks the dragon.*

D means *The dragon devours the damsel.*

T means *The damsel is trapped in the tower.*

Translate the symbolic proposition into English.

2. $T \supset D$ (2) _____

3. $D \bullet \sim K$ (2) _____

4. $(T \vee D) \supset K$ (3) _____

Symbolize the proposition. (2 each)

5. The knight attacks the dragon if the damsel is trapped in the tower. _____

6. The knight attacks the dragon only if the dragon devours the damsel. _____

7. The damsel is trapped in the tower unless the dragon devours the damsel. _____

Problems 8-10: If **A** and **B** are true propositions, and **X** and **Y** are false propositions, determine the truth value of the given compound proposition. Circle T for true, F for false. (1 each)

8. $X \supset A$ T F

9. $B \supset (\sim X \supset Y)$ T F

10. $Y \supset X$ T F

INTERMEDIATE LOGIC | Test 1, Form A
Lessons 1–4 (40 points)

Name _____

1. What is another word for a *proposition*? (1) _____
2. Give an example of a truth-functional, compound proposition (in words, not symbols). (2)

3. Explain the major differences between *simple propositions* and *compound propositions*. (3)

4. What are the differences between *propositional constants* and *propositional variables*? (3)

Problems 5-12: Symbolize the proposition using the given constants.

M means *We see a movie.* **P** means *We eat popcorn.*
C means *We eat candy.* **G** means *We play a game.*

5. We do not see a movie. (1) _____
6. We eat popcorn and candy. (1) _____
7. We see a movie or play a game. (1) _____
8. We do not both see a movie and play a game. (2) _____
9. We do not eat popcorn but we see a movie. (2) _____
10. If we see a movie then we eat popcorn. (1) _____
11. We play a game and eat candy, or we see a movie and eat popcorn. (2) _____
12. If we see a movie then if we eat popcorn then we do not eat candy. (3) _____

13. Complete the truth table for each of the given compound propositions. (4)

<u>p</u>	<u>q</u>	<u>$\sim p$</u>	<u>$p \vee q$</u>	<u>$p \bullet q$</u>	<u>$p \supset q$</u>
T	T				
T	F				
F	T				
F	F				

Problems 14-15: Construct the truth table for the compound proposition on the line to the right.

14. $\sim(\sim p \vee q)$ (4) _____

15. $p \supset (q \bullet r)$ (5) _____

Problems 16-20: Assume the propositions **A** and **B** are *true*, **X** and **Y** are *false*, and **P** and **Q** are an *unknown* truth value. Find the truth value of each compound proposition. If true circle T, if false circle F. If the truth value cannot be determined, circle ? (1 each)

16. $A \vee X$ T F ?
17. $Y \bullet P$ T F ?
18. $B \supset Q$ T F ?
19. $X \supset Q$ T F ?
20. $(A \vee P) \bullet X$ T F ?

INTERMEDIATE LOGIC | Test 1, Form B
Lessons 1-4 (41 points)

Name _____

1. Give a synonym for the term *proposition*. (1) _____
2. What is a *logical operator*? (2) _____

3. What is a propositional *variable*? (2) _____

4. Give an example of a truth-functional, compound proposition (in words, not symbols). (2)

Problems 5-13: **M** means *I listen to music*.

S means *I like to sing along*.

D means *I like to dance*.

P means *I play an instrument*.

Symbolize the following propositions:

5. I do not play an instrument. (1) _____
6. If I listen to music, then I like to dance or sing along. (2) _____
7. I like to sing along unless I play an instrument. (2) _____
8. I neither listen to music nor play an instrument. (2) _____
9. I do not like to both dance and sing along. (2) _____
10. I listen to music only if I like to sing along. (2) _____

Translate the following symbolic propositions:

11. $\sim S \vee \sim P$ (2) _____
12. $P \bullet \sim S$ (2) _____
13. $(M \bullet \sim P) \supset S$ (3) _____

14. Complete the truth table for each of the given compound propositions. (4)

<u>p</u>	<u>q</u>	<u>$\sim p$</u>	<u>$p \bullet q$</u>	<u>$p \vee q$</u>	<u>$p \supset q$</u>
T	T				
T	F				
F	T				
F	F				

Problems 15-16: Construct the truth table for the compound proposition on the line to the right.

15. $\sim p \supset q$ (3) _____

16. $p \bullet (q \vee r)$ (5) _____

Problems 17-20: Assume the propositions **A** and **B** are *true*, **X** and **Y** are *false*, and **P** and **Q** are an *unknown* truth value. Find the truth value of each compound proposition. If true circle T, if false circle F. If the truth value cannot be determined, circle ? (1 each)

17. $P \bullet X$ T F ?

18. $\sim (X \vee Y)$ T F ?

19. $\sim B \supset Q$ T F ?

20. $P \supset (A \bullet P)$ T F ?

Name _____

1. What does it mean that an argument is *valid*? (2) _____

Problems 2-3: Use a truth table to determine the validity of the given argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity. (5, 8)

2. $\sim(p \bullet q) \quad q \quad \therefore \sim p$ 3. $p \equiv (q \vee r) \quad q \supset r \quad \therefore p \supset q$

Problems 4-5: Translate the argument into symbolic form on the line using the given constants. Then use a truth table to determine the validity of the argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity. (10 each)

4. If a government becomes tyrannical, then it will take away the rights of citizens. A government takes away the rights of citizens if and only if the citizens are complacent. Thus, a government does not become tyrannical or the citizens are complacent. (**T, R, C**)

5. If you brush and floss regularly then you will have healthy teeth. You brush regularly but you do not floss regularly. Therefore you will not have healthy teeth. (**B, F, H**)

INTERMEDIATE LOGIC | Test 2, Form A
Lessons 5-7 (54 points)

Name _____

1. What is a *tautology*? Give a symbolic example of a tautology. (3) _____

Problems 2-3: Circle T if the statement is true, circle F if it is false. (1 each)

2. A biconditional is true if and only if both parts are true. T F
3. If the conclusion of a valid argument is false, one of the premises is false. T F

Problems 4-6: Symbolize the proposition using the given constants.

B means *You eat breakfast.* **L** means *You eat lunch.*
D means *You eat dinner.* **H** means *You are hungry.*

4. You eat lunch or dinner, but you don't eat breakfast. (3) _____
5. You eat lunch only if you don't eat breakfast. (2) _____
6. You are not hungry if and only if you eat breakfast and dinner. (3) _____

Problems 7-9: Assume the propositions **A** and **B** are *true*, **X** and **Y** are *false*, and **P** and **Q** are an *unknown* truth value. Determine the truth value of each compound proposition. If true circle T, if false circle F. If the truth value cannot be determined, circle ? (1 each)

7. $(A \bullet \sim X) \equiv \sim B$ T F ?
8. $\sim P \supset (P \supset Y)$ T F ?
9. $(P \supset Q) \vee (Q \supset P)$ T F ?
10. Construct a truth table on the line below to determine if $\sim p \supset q$ is equivalent to $p \vee q$. (5)

Are they equivalent? Yes No

11. Construct a truth table on the line below to determine if $p \equiv q$ contradicts $p \equiv \sim q$. (5)

Are they contradictory? Yes No

Problems 12-13: Use a longer truth table to determine the validity of the given argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity. (5 each)

12. $p \supset q$ p $\therefore p \bullet q$ 13. $p \vee q$ $\sim p$ $\therefore p \equiv q$

Problems 14-15: Translate the argument into symbolic form on the line using the given constants. Then use a longer truth table to determine the validity of the argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity.

14. He is a prince if and only if his mother is a queen. Either he is not a prince or his mother is not a queen. Thus, he is not a prince. (**P, Q**) (8)

15. Scott and Rachel are not both students. Scott is a student or Luke is a student. Therefore, if Luke is a student then Rachel is not a student. (**S, R, L**) (10)

INTERMEDIATE LOGIC | Test 2, Form B

Lessons 5-7 (51 points)

Name _____

1. Give a symbolic example of a self-contradiction. (2) _____

Problems 2-4: Circle T if the statement is true, circle F if it is false. (1 each)

2. The negation of any self-contradiction is a tautology. T F

3. If the antecedent of a conditional is false, the conditional is considered true. T F

4. An invalid argument can have true premises and a true conclusion. T F

Problems 5-7: Symbolize the proposition using the given constants. (2 each)

B means *You read books.* **T** means *You travel.* **L** means *You will learn.*

5. If you read books or travel then you will learn. _____

6. You will not learn unless you read books. _____

7. It is not the case that you travel but will not learn. _____

Problems 8-10: Assume the propositions **A** and **B** are *true*, **X** and **Y** are *false*, and **P** and **Q** are an *unknown* truth value. Determine the truth value of each compound proposition. If true circle T, if false circle F. If the truth value cannot be determined, circle ? (1 each)

8. $\sim (A \bullet X)$ T F ?

9. $(P \vee \sim P) \supset \sim B$ T F ?

10. $Q \equiv (Y \supset Q)$ T F ?

11. Construct a truth table on the line below to determine if $p \vee q$ is equivalent to $\sim (p \bullet q)$ (5)

Are they equivalent? Yes No

12. Construct a truth table on the line below to determine if $p \bullet q$ contradicts $p \supset \sim q$. (5)

Do they contradict? Yes No

Problems 13-14: Use a longer truth table to determine the validity of the given argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity. (5 each)

13. $p \vee q$ p $\therefore \sim q$ 14. $p \supset q$ $q \supset p$ $\therefore p \equiv q$

Problems 15-16: Translate the argument into symbolic form on the line using the given constants. Then use a longer truth table to determine the validity of the argument. Remember to write VALID or INVALID. If invalid, circle the row(s) which show invalidity.

15. He is a native if and only if he was born here. He was not born here. So he is not a native. (N, B) (7)

16. The Seattle Symphony and Nirvana are not both great bands. The Seattle Symphony is a great band if the London Orchestra also is. Thus, if the London Orchestra is a great band then Nirvana is not. (S, N, L) (10)
