

**2021 TJSSA State Futurity
Genetic Evaluation Quiz
Senior Division**

You have 60 minutes to complete this quiz. Questions 31 through 35 are tiebreaker questions. Further ties will be broken by order of finish.

For each question, choose the best answer.

1. Through DNA testing, you learn that the cow you are planning to flush is heterozygous for both the horned/polled and color coat traits. The flush sire you are considering is homozygous polled and heterozygous black. If you proceed with this mating, what is the likelihood that each calf will be black and homozygous polled?
 - a. 75%
 - b. 62.5%
 - c. 50%
 - d. 37.5%
 - e. 25%

2. SimAngus™ Bull X has a BF EPD of -0.035 and a REA EPD of 0.56. SimAngus™ Bull Y has a BF EPD of -0.079 and a REA EPD of 0.86. Which of the following statements should you expect to be true?
 - a. Bull X should produce offspring with better USDA Yield Grades.
 - b. Bull Y should produce offspring with better USDA Yield Grades.
 - c. Bull X should produce offspring with better USDA Quality Grades.
 - d. Bull Y should produce offspring with better USDA Quality Grades.
 - e. Both B and C are true.

3. Within a contemporary group, what is the average birth weight ratio?
 - a. 1
 - b. 50
 - c. 100
 - d. Not enough information is available.

4. Which of these statements about Parentage Verification is not true?
 - a. Across all breed associations, an estimated 10% of pedigrees reported are inaccurate.
 - b. A parent animal must have DNA markers on file with ASA in order to be compared to potential offspring.
 - c. If an animal does not qualify to one of its registered parents, its registration is automatically suspended.
 - d. When verifying parentage, ASA can run a random-survey type test to identify a potential parent animal.

5. In what year was the first Simmental Sire Summary published?
 - a. 1971
 - b. 1981
 - c. 1991
 - d. 2001

6. Due to a record keeping error, you are unsure of a calf's AI sire. However, you can confidently narrow it to four possibilities. You submit DNA on the calf and its dam. Combined with the sire information already on file, you may be able to identify the calf's sire. Based on these simplified lab results, which bull is the sire?

	<i>Locus 1</i>	<i>Locus 2</i>	<i>Locus 3</i>	<i>Locus 4</i>	<i>Locus 5</i>
Calf:	Aa	bb	CC	Dd	EE
Dam:	AA	Bb	Cc	dd	EE

 - a. Sire A: aa Bb CC Dd ee
 - b. Sire B: Aa bb cc DD Ee
 - c. Sire C: Aa bb Cc DD EE
 - d. Sire D: aa BB CC dd Ee
 - e. Multiple sires not excluded. More information is needed.

7. Which EPD or index is generally considered to be the best indicator of muscle mass?
 - a. TI
 - b. MARB
 - c. CW
 - d. REA
 - e. YG

8. A young sire's first daughters were born in Spring 2021. In the year these daughters are first able to directly contribute to their sire's Stayability records, what will be the tattoo letter of their calves?
- N
 - O
 - P
 - Q
 - R

For questions 9 through 13, use the data in the tables below.

Contemporary Group 1							
Sire A		Sire B		Sire C		Sire D	
<i>Calf ID</i>	<i>ADJ WW</i>	<i>Calf ID</i>	<i>ADJ WW</i>	<i>Calf ID</i>	<i>ADJ WW</i>	<i>Calf ID</i>	<i>ADJ WW</i>
Heifer 004	586	Heifer 009	608	Heifer 017	630	Heifer 006	620
Heifer 013	605	Heifer 010	599	Heifer 025	598	Heifer 020	588
Heifer 024	582	Heifer 022	585	Heifer 027	634	Heifer 031	604
		Heifer 033	618	Heifer 030	618		
		Heifer 038	600				
3 Heifers average 591 lbs.		5 Heifers average 602 lbs.		4 Heifers average 620 lbs.		3 Heifers average 604 lbs.	
Contemporary Group 1 - 15 heifers average 605 lbs.							

Contemporary Group 2					
Sire A		Sire C		Sire D	
<i>Calf ID</i>	<i>ADJ WW</i>	<i>Calf ID</i>	<i>ADJ WW</i>	<i>Calf ID</i>	<i>ADJ WW</i>
Bull H03	714	Bull H06	685	Bull H11	722
Bull H19	690	Bull H08	771	Bull H24	686
Bull H35	681	Bull H27	725		
		Bull H32	707		
3 Bulls average 695 lbs.		4 Bulls average 722 lbs.		2 Bulls average 704 lbs.	
Contemporary Group 2 - 9 bulls average 709 lbs.					

9. What is the WW ratio for Bull H08?
- 162
 - 109
 - 107
 - 97
 - 92
10. Assume that you find similar data over many contemporary groups. Which bull would you expect to have the highest WW EPD?
- Sire A
 - Sire B
 - Sire C
 - Sire D
11. True or False: When recording weaning weights for a contemporary group, each individual animal should be weighed as close to 205 days of age as possible.
- True
 - False
12. Within Contemporary Group 1, how many heifers would you expect to have a WW ratio at or greater than 100?
- 9
 - 8
 - 7
 - 6
 - 5
13. Provided that these contemporary groups have been set up properly, which of the following should definitely not be included?
- A mixture of Purebred Simmental and SimAngus™ sire groups
 - Calves from natural service sires
 - Embryo transfer calves
 - Calves that you do not plan to retain
 - None of the above should be included.

14. SimAngus™ Cow 622 has a CW EPD of 41.9. SimAngus™ Cow 715 has a CW EPD of 34.8. Based on this information, which of the following statements is definitely true?
- You should expect Cow 622 to produce offspring with heavier actual carcass weights, on average.
 - You should expect Cow 622 to produce offspring with heavier adjusted weaning weights, on average.
 - You should expect Cow 622 to produce offspring with better USDA Yield Grades, on average.
 - All of the above.
 - None of the above. Terminal EPDs only apply to sires.
15. Which of the following is definitely not an example of an Economically Relevant Trait (ERT)?
- Heifer Pregnancy
 - Calving Ease
 - Birth Weight
 - Weaning Weight
16. Which of the following would not result in a Purebred Simmental calf?
- A 3/4 SM 1/4 AR cow bred to a Purebred Simmental bull
 - A 3/4 SM 1/8 AN 1/8 BR cow bred to a Purebred Simmental bull
 - A 5/8 SM 3/8 cow bred to a Purebred Simmental bull
 - A Fullblood Simmental cow bred to a Purebred Simmental bull
17. EPD accuracy is expressed on a scale from:
- 0 to 1
 - 0 to 100
 - 1 to 100
 - 1 to 1000
18. You are in the market for a new Purebred Simmental herd sire. You estimate that he will breed 35 females per year over the next three years before you replace him. You intend to keep his best daughters as replacement females, and the rest of his calves will be sold on grade and yield. At a sale, you narrow your scope to two bulls: Lot 7 has an \$API of 146.3 and a \$TI of 80.7, and Lot 12 has an \$API of 131.3 and a \$TI of 76.7. By trusting and using these indexes, which of the following is true?
- Lot 7 provides \$1995 more value to your program.
 - Lot 7 provides \$1575 more value to your program.
 - Lot 7 provides \$525 more value to your program.
 - Lot 7 provides \$420 more value to your program.
 - None of the above. Lot 12 is more valuable.
19. According to ASA's Cow Herd Roundup project (CHR), an estimated _____ of pedigrees in Herdbook are inaccurately reported.
- 3%
 - 7%
 - 11%
 - 14%
20. Cow E701 has a YW EPD that ranks in the 75th percentile. Cow D627 has a YW EPD that ranks in the 15th percentile. Which female should, on average, produce offspring that more consistently outperform their contemporaries at 365 days of age?
- Cow D627
 - Cow E701
 - There will be no measurable difference.
 - Growth EPDs should only be applied to sires.
21. The IGS Feeder Profit Calculator is most directly connected to:
- Yield Grade (YG)
 - Average Daily Gain (ADG)
 - Weaning Weight (WW)
 - Terminal Index (\$TI)
22. A commercial breeder is turning out her heterozygous black herd sire with a group of 33 open females. 9 of these females are homozygous black, 20 are heterozygous black, and 4 are red. Assuming 100% conception and all single births (no twins), how many black calves should the producer expect to have?
- 26
 - 31
 - 19
 - 29

For questions 23 through 30, refer to the following sires. Information on these bulls can be found on the last sheet of your quiz.

- A. Double Bar D Annuity 635F
 - B. GSC GCCO Dew North 102C
 - C. SAS Copperhead G354
 - D. THSF Lover Boy B33
 - E. WHF/JS/CCS Double Up G365
23. Which bull should you expect to produce daughters with the highest percentage of unassisted births as first-calf heifers?
24. Which bull should you expect to produce offspring with the least IMF, on average?
25. Which bull is most likely to be tested for the diluter gene?
26. Which bull would you expect to produce the heaviest calves at birth, on average?
27. How many of these bulls are definitely homozygous polled by pedigree?
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
28. True or False: All of these bulls could sire calves that are 3/4 SM 1/4 AN.
- a. True
 - b. False
 - c. Not enough information is available.
29. Consider the WW EPD of Bull E. In spite of its relatively low accuracy, we can be _____ confident that its true value lies between 60.1 and 77.7.
- a. 99%
 - b. 95%
 - c. 75%
 - d. 68%
 - e. 50%
30. In a carcass study, Bull D sired a small group of terminal offspring with an average Yield Grade of 2.0. Based on their current EPDs, what would you expect those average Yield Grades to be if Bull B had been used instead?
- a. 1.0
 - b. 1.9
 - c. 1.99
 - d. 2.1
 - e. 3.0

TIEBREAKER QUESTIONS

Questions 31 through 35 are tiebreaker questions only.

31. What was the first multi-breed EPD or index evaluated using IGS's BOLT technology?
- a. All Purpose Index (API)
 - b. Stayability (STAY)
 - c. Maternal Calving Ease (MCE)
 - d. Average Daily Gain (ADG)
32. What ASA program focuses on gathering genotype information on all the females within individual herds, in order to improve genomic evaluations and increase genetic progress?
- a. Cow Herd Roundup (CHR)
 - b. Total Herd Enrollment (THE)
 - c. Progress Through Performance (PTP)
 - d. Whole Herd Reporting (WHR)

33. With regards to animal breeding, what does h^2 indicate?
- Heterosis
 - Heritability
 - Heterozygous
 - Heredity
34. Osteopetrosis (OS), commonly known as *marble bone*, is a lethal genetic defect that most often affects what breed?
- Angus
 - Hereford
 - Red Angus
 - Shorthorn
35. *Refer to the bulls you used for questions 23 through 30.*
As the accuracy of Bull E's CE EPD increases, it is 95% likely that its value will fall into what range?
- 11.4 to 20.6
 - 12.0 to 20.0
 - 13.7 to 18.3
 - 6.8 to 25.2

ASA #: 3542861

Registered
CANSM - 1249222

DOUBLE BAR D ANNUITY 635F

Black (Heterozygous Black)
Polled (Homozygous Polled)

Tattoo: RLD 635F
Right Ear

Single Birth Bull

PB SM

PQS GE

TraitTrac
(Check available results)

Owner: 344688 - HIGH RIDGE FARMS/BOUCHARD LIVESTOCK
Breeder: 309941 - DOUBLE BAR D RANCH

Birth Date: 2018-03-22
Original Issue: 2019-03-13

BOLT - 2021-04-27

EPD	CE	Brth	Wean	Year	ADG	MCE	Milk	MWW	Stay	Doc	CW	YG	Marb	BF	REA	Shr	API	TI
12.4	2.6	68.6	96.8	0.18	7.7	25.2	59.4	16.3	7.0	34.3	-0.43	0.03	-0.101	0.89	-0.21	120.2	68.7	
±4.21	±1.5	±8.8	±13.88	±0.015	±5.85	±9.76	±8.71	±5.25	±3.3	±10.42	±0.13	±0.153	±0.025	±0.237	±0.247			
ACC	0.46	0.50	0.46	0.46	0.26	0.18	0.28	0.26	0.34	0.46	0.36	0.41	0.37	0.45	0.01			
%	30	70	80	90	20	35	65	50	95	30	50	75	20	50	99	70	90	

Pedigree

Color HPS

W/C LOADED UP 1119Y	CANSM - 1199413	2654155	BH	PP
W/C BANKROLL 811D	CANSM - 1217569	3187005	BH	PP
MISS WERNING KP 8543U		2446017	B	
DOUBLE BAR D ANNUITY 635F	CANSM - 1249222	3542861	BH	PP
JF AMERICAN PRIDE 0987X	CANSM - 1124288	2573743	B	P
DOUBLE BAR D PAYTON 425B	CANSM - 1127052	(3542860)	B	P
DOUBLE BAR D PAYTON 658Z	CANSM - 1114471	(3542859)	BH	P

ASA #: 3141837

Registered

GSC GCCO DEW NORTH 102C

Black (Homozygous Black)
Polled (Homozygous Polled)

Tattoo: 102C
Left Ear

Frozen Embryo Bull

PB SM

PQB GE

TraitTrac
(Check available results)

Owner: 255562 - GLACIER CATTLE CO
Breeder: 324327 - COLE WHISMAN/GERDES SHOW CATTLE

Birth Date: 2015-09-10
Original Issue: 2016-08-30

BOLT - 2021-04-27

EPD	CE	Brth	Wean	Year	ADG	MCE	Milk	MWW	Stay	Doc	CW	YG	Marb	BF	REA	Shr	API	TI
15.0	0.1	89.5	120.6	0.19	7.7	19.0	63.7	9.6	10.5	30.9	-0.50	-0.05	-0.095	1.09	-0.44	117.6	82.0	
±2.65	±0.57	±5.05	±8.74	±0.01	±4.74	±8.57	±7.38	±4.62	±3.55	±7.72	±0.11	±0.133	±0.02	±0.189	±0.198			
ACC	0.66	0.81	0.69	0.66	0.40	0.28	0.39	0.35	0.29	0.60	0.46	0.49	0.49	0.56	0.21			
%	10	20	10	35	85	20	85	40	99	60	45	15	95	40	15	10	75	25

Pedigree

Color HPS

CNS DREAM ON L186	CANSM - 632589	2144976		PP
HTP/SVF DURACELL T52		2392068	BB	
HTP SVF HONEYDEW		2140238		P
GSC GCCO DEW NORTH 102C		3141837	BB	PP
WELSHS DEW IT RIGHT067T		2403649	BB	PP
WELSH'S SCARLET 161Z		2685388	B	P
WELSHS ROXIE 103W		2510264	BH	P

ASA #: 3620331

Registered

SAS COPPERHEAD G354

Red
Polled (Homozygous Polled)

Tattoo: G354
Left Ear

Single Birth Bull

PB SM

PQB GE

TraitTrac
(Check available results)

Owner: 166320 - ROBERT & DEANNE YOUNG
Breeder: 040241 - SPRINGERS ARABIANS & SIMM

Birth Date: 2019-02-10
Original Issue: 2019-10-08

BOLT - 2021-04-27

EPD	CE	Brth	Wean	Year	ADG	MCE	Milk	MWW	Stay	Doc	CW	YG	Marb	BF	REA	Shr	API	TI
9.0	1.9	88.5	130.1	0.26	3.6	31.7	75.9	17.7	9.9	12.5	-0.47	0.07	-0.075	0.93	-0.34	131.1	83.2	
±4.06	±1.29	±8.8	±13.62	±0.015	±5.85	±9.4	±8.59	±5.18	±3.25	±10.23	±0.13	±0.153	±0.026	±0.237	±0.24			
ACC	0.48	0.57	0.46	0.47	0.47	0.26	0.21	0.29	0.27	0.35	0.47	0.37	0.41	0.36	0.45	0.04		
%	75	55	15	20	35	90	5	4	30	70	99	30	65	80	40	50	40	25

Pedigree

Color HPS

NCB COBRA 47Y	CANSM - 755730	2966133	B	P
ERIXON BITTEN 203A	CANSM - 1115825	2966135	B	P
BMD MISS BLK ICE DANCER	CANSM - 766465	(2966134)	B	P
SAS COPPERHEAD G354		3620331	R	PP
R PLUS RELOAD 2006Z	CANSM - 775135	2794997		PP
SAS MISS ARAPHAOE B354		2958847	B	PP
SAS STARLIGHT Z354		2642610	B	PP

ASA #: 2983443
Registered

THSF LOVER BOY B33
Black (Heterozygous Black)
Polled (Homozygous Polled)

Tattoo: B33
Left Ear

Frozen Embryo Bull

PB SM

PQB GE

TraitTrac
(Check available results)

Owner: 001090 - YARDLEY CATTLE CO
Breeder: 213984 - HADDEN SIMMENTAL

Birth Date: 2014-10-16
Original Issue: 2015-06-16

BOLT - 2021-04-27

	CE	Brth	Wean	Year	ADG	MCE	Milk	MWW	Stay	Doc	CW	YG	Marb	BF	REA	Shr	API	TI
EPD	15.3	-1.0	82.4	115.8	0.21	9.0	17.8	59.0	15.6	13.3	24.7	-0.40	0.43	-0.067	0.93	-0.40	155.9	90.7
PC	±2.65	±0.51	±3.75	±6.68	±0.007	±4.66	±7.62	±6.41	±4.62	±3.15	±6.75	±0.11	±0.133	±0.021	±0.185	±0.2		
ACC	0.66	0.83	0.77	0.74	0.74	0.41	0.36	0.47	0.35	0.37	0.65	0.46	0.49	0.47	0.57	0.20		
%	10	10	30	45	75	10	95	65	60	25	70	65	5	95	40	20	10	10

Pedigree Color HPS

	CNS DREAM ON L186	CANSM - 632589	2144976	PP
	HTP/SVF DURACELL T52		2392068	BB
	HTP SVF HONEYDEW		2140238	P
THSF LOVER BOY B33			2983443	BH PP
	SVF/NJC BUILT RIGHT N48	CANSM - 687147	2225381	B
	RP/MP RIGHT TO LOVE 015U		2434417	
	PCC QUEENS VALENTINE R9		2293348	P

ASA #: 3658592
Registered

WHF/JS/CCS DOUBLE UP G365
Black (Homozygous Black)
Polled (Homozygous Polled)

Tattoo: G365
Left Ear

Frozen Embryo Bull

PB SM

PQB GE

TraitTrac
(Check available results)

Owner: 004561 - ALLEN DVM, HENRY E
Breeder: 311500 - STEENHOEK, CHESNEY

Birth Date: 2019-04-08
Original Issue: 2020-10-29

BOLT - 2021-04-27

	CE	Brth	Wean	Year	ADG	MCE	Milk	MWW	Stay	Doc	CW	YG	Marb	BF	REA	Shr	API	TI
EPD	16.0	-1.3	68.9	87.2	0.11	8.1	22.4	56.8	12.9	11.3	6.4	-0.47	-0.07	-0.070	0.90		118.0	70.8
PC	±4.6	±1.62	±8.8	±14.14	±0.015	±6.08	±10.12	±9.2	±5.04	±3.55	±10.23	±0.13	±0.148	±0.025	±0.241	±		
ACC	0.41	0.46	0.46	0.45	0.45	0.23	0.15	0.24	0.29	0.29	0.47	0.36	0.43	0.37	0.44			
%	4	10	80	99	99	15	60	75	90	50	99	30	95	95	45		75	80

Pedigree Color HPS

	W/C EXECUTIVE ORDER 8543B		2900283	BH	PP
	W/C DOUBLE DOWN 5014E		3336150	BB	PP
	W/C MISS WERNING 5014C		3211676	BB	PP
WHF/JS/CCS DOUBLE UP G365			3658592	BB	PP
	CCR WIDE RANGE 9005A		2725666	BB	PP
	WHF SUMMER 365C		3118556	BB	PP
	WHF ANDIE 365A		2860142	BB	PP